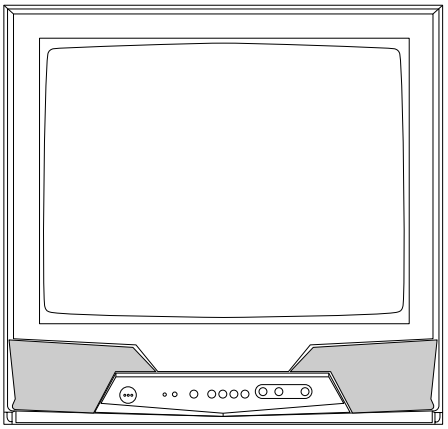
SHARP SERVICE MANUAL

S30X420GT-20/

COLOUR TELEVISION

Chassis No. UA-1



MODELS 20GT-20 21GT-20

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified be used.

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WARNING

The chassis in this receiver is partially hot. Use an isolation transformer between the line cord plug and power receptacle, when servicing this chassis. To prevent electric shock, do not remove cover. No user – serviceable parts inside. Refer servicing to qualified service personnel.

SHARP CORPORATION

FEATURES

- Favourite Channel
- Full Auto Channel Preset and Auto Channel Skip
- 100-CH Program Memory
- CATV (Hyper Band) Ready 〈Used Frequency Synthesizer Tuner〉
- AVL (Sound Keeper) Function
- Black Stretch Circuit
- On Timer/Sleep Timer/Reminder Timer
- Blue Back Noise Mute
- Front AV - In & Rear AV - In/Out Terminals
- Colour-Comb Filter (NTSC Only)
- High Contrast Picture
- Hotel Mode
- Front Headphone Jack
- English/Thai OSD
- Mono billingual

SPECIFICATIONS

Convergence ..... Self Converging System
Focus ..... Quadra-Potential Electrostatic

Sweep Deflection ..... Magnetic
Intermediate Frequencies
  Picture IF Carrier ..... 38.9 MHz
  Sound IF Carrier Frequency
    5.74 MHz ..... 33.16 MHz
    5.50 MHz ..... 33.40 MHz
  Colour Sub-Carrier Frequency ..... 34.47 MHz

Power Input ..... 110 - 240V AC 50/60 Hz
Power Consumption
    20GT-20 ..... 77 W
    21GT-20 ..... 81 W

Audio Power Output Rating ..... 5.0 W (at Max.)

Speaker
  Size ..... 5 × 9 cm (2 pc)
  Voice Coil Impedance ..... 16 ohms at 400 Hz

Aerial Input Impedance
  VHF/UHF ..... 75 ohm Unbalanced
Receiving System ..... CCIR/PAL B, G

Tuner Ranges
  - VHF-Channels ..... E2 (48.25 MHz) thru E12 (224.25 MHz)
  - UHF-Channels ..... E21 (471.25 MHz) thru E69 (855.25 MHz)

Dimensions
    20GT-20 ..... Width: 506.0 mm
      Height: 476.0 mm
      Depth: 479.0 mm
      Weight (approx.): 17.2 kg
    21GT-20 ..... Width: 506.0 mm
      Height: 476.0 mm
      Depth: 479.0 mm
      Weight (approx.): 19.1 kg

Cabinet Material ..... All Plastics

Specifications are subject to change without prior notice.

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Cabinet Material ..... All Plastics

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IMPORTANT SERVICE NOTES

Maintenance and repair of this receiver should be done by qualified service personnel only.

SERVICE OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove static charge from it by Connecting a 10K ohm Resistor in series with an insulated wire (such as a test probe) between picture tube dag and 2nd anode lead. (AC line cord should be disconnected from AC outlet.)

1. **Picture tube in this receiver employs integral implosion protection.**
2. **Replace with tube of the same type number for continued safety.**
3. **Do not lift picture tube by the neck.**
4. **Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely.**

X-RAY

This receiver is designed so that any X-Ray radiation is kept to an absolute Minimum. Since certain malfunctions or servicing may produce potentially hazardous radiation with prolonged exposure at close range, the following precautions should be observed:

1. **20GT-20 : When repairing the circuit, be sure not to increase the high voltage to more than 28.7kV (at beam 0 μA) for the set.**
   21GT-20 : When repairing the circuit, be sure not to increase the high voltage to more than 29.0kV (at beam 0 μA) for the set.

2. **20GT-20 : To keep the set in a normal operation , be sure to make it function on 24.5kV ± 1.5kV (at beam 1100 μA) in the case of the set. The set has been factory - Adjusted to the above-mentioned high voltage.**

   21GT-20 : To keep the set in a normal operation , be sure to make it function on 25.2kV ± 1.5kV (at beam 1100 μA) in the case of the set. The set has been factory - Adjusted to the above-mentioned high voltage.

∴ **If there is a possibility that the high voltage fluctuates as a result of the repairs, never forget to check for such high voltage after the work.**

3. **Do not substitute a picture tube with unauthorized types and/or brands which may cause excess X-ray radiation.**

BEFORE RETURNING THE RECEIVER

Before returning the receiver to the user, perform the following safety checks.

1. **Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.**
2. **Inspect all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators etc.**

ADJUSTMENT PRECAUTION

This model's setting are adjusted in two different ways: through the I2C bus control and in the conventional analog manner. The adjustments via the I2C bus control include preset-only items and variable data.

1. Setting the service mode by the microprocessor.

(1). Short JA 122 & JA 124 for 1 second and release to switch to the service mode position, and the microprocessor is in input mode. (Adjustment through the I2C bus control). (Use JWS Key to set as well).
(2). Press the CH DOWN / UP key on the remote controller to get ready to select the mode one by one.
(3). Press the CH DOWN / UP key on the remote controller to select the modes reversibly one by one.
(4). Using the VOLUME UP/ DOWN key on the remote controller, the data can be modified.
(5). Short JA 122 & JA 124 for 1 second and release to switch to the normal mode (OFF) position, and the microprocessor is in out of the service mode.

2. Factory Presetting.

(1). Short JA 122 & JA 124 for 1 second and release to switch to the service mode position and turn on the main power switch. Initial values are automatically preset, only when a new EEPROM is used (Judge with the first 4 bytes).
(2). The initial data are preset as listed in page 4, 5, & 6.
(3). Make sure the data need modify or not (Initial data).

Note: Once the chassis has been assembly together and ready to be POWER ON for the FIRST TIME, make sure to short JA 122 & JA 124 to switch to the service mode position first and then turn on the main power switch (See 2-(1) above).

Precaution: If haven't done this initiation, it may possibly generate excessive Beam current.

3. For reference please check with memory map (UA1 Series type RH-IX3368CEN0 Attachment)

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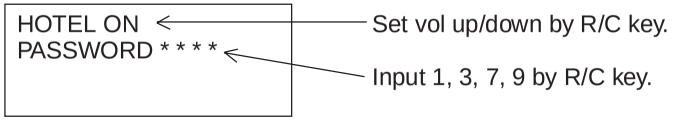
UA1 HOTEL MODE APPLICATION

How to enable/disable the “Hotel Mode” ?

Ans: a) Press the R/C (FUNCTION) key until language selection appear, within five second press the (one/two digit) key and keep pressing it for five second, then you can see the hotel mode with four digits password.

b) Key in the four digits password starting with number “1”, “3”, “7”, “9”, then the hotel mode will be enable, you can switch on/off the hotel mode by using R/C (volume up/down) key.



#1 Ch 1 is your selected channel for hotel mode.

* We recommend
Before set the hotel mode, it is better to choose ch 1 & set s-vol level up to 75% full scale. After set hotel mode, starting channel will be always ch 1 & maximum sound level out will be set the half of full scale.

* If you set hotel mode in AV, starting channel will be the last ch which you received before power off (same as normal operation)

CONDITION:

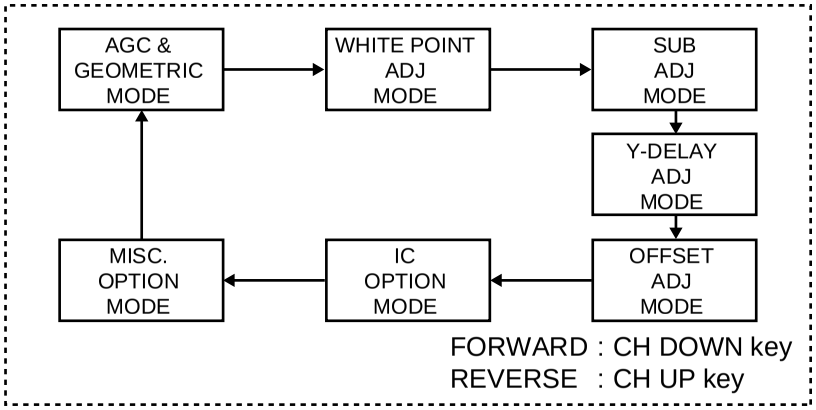
When using hotel mode, user can control “contrast”, “brightness”, “sharpness” and “tint” function.
But after power off, it will return to the initial setting.
You can’t use: --

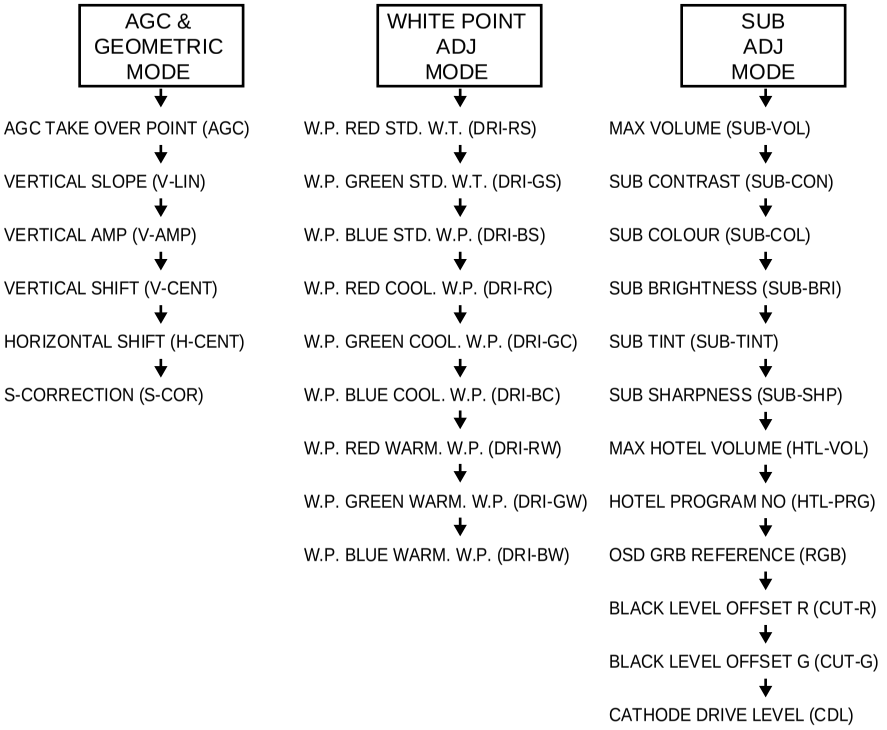
Preset mode
Fine tuning
Skip mode
System selection

The others function is allowed to be used.

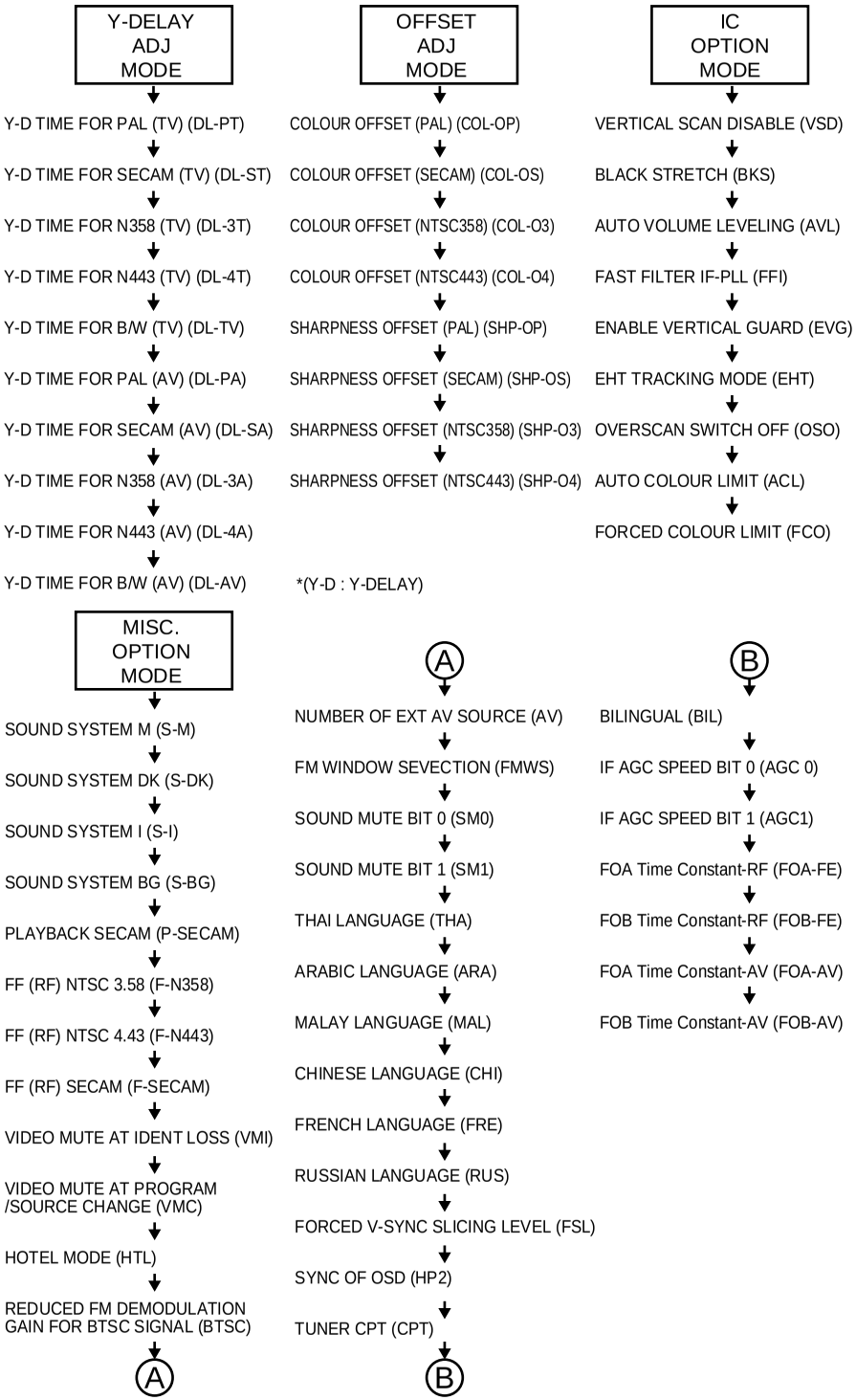
SERVICE MODE

1) In the Service Mode, Key is used to select the mode in the following order.




AGC & GEOMETRIC MODE
AGC TAKE OVER POINT (AGC)
VERTICAL SLOPE (V-LIN)
VERTICAL AMP (V-AMP)
VERTICAL SHIFT (V-CENT)
HORIZONTAL SHIFT (H-CENT)
S-CORRECTION (S-COR)
WHITE POINT ADJ MODE
W.P. RED STD. W.T. (DRI-RS)
W.P. GREEN STD. W.T. (DRI-GS)
W.P. BLUE STD. W.P. (DRI-BS)
W.P. RED COOL. W.P. (DRI-RC)
W.P. GREEN COOL. W.P. (DRI-GC)
W.P. BLUE COOL. W.P. (DRI-BC)
W.P. RED WARM. W.P. (DRI-RW)
W.P. GREEN WARM. W.P. (DRI-GW)
W.P. BLUE WARM. W.P. (DRI-BW)
SUB ADJ MODE
MAX VOLUME (SUB-VOL)
SUB CONTRAST (SUB-CON)
SUB COLOUR (SUB-COL)
SUB BRIGHTNESS (SUB-BRI)
SUB TINT (SUB-TINT)
SUB SHARPNESS (SUB-SHP)
MAX HOTEL VOLUME (HTL-VOL)
HOTEL PROGRAM NO (HTL-PRG)
OSD GRB REFERENCE (RGB)
BLACK LEVEL OFFSET R (CUT-R)
BLACK LEVEL OFFSET G (CUT-G)
CATHODE DRIVE LEVEL (CDL)

FORWARD : CH DOWN key
REVERSE : CH UP key
* ( ) means OSD display.


Y-DELAY ADJ MODE
Y-D TIME FOR PAL (TV) (DL-PT)
Y-D TIME FOR SECAM (TV) (DL-ST)
Y-D TIME FOR N358 (TV) (DL-3T)
Y-D TIME FOR N443 (TV) (DL-4T)
Y-D TIME FOR B/W (TV) (DL-TV)
Y-D TIME FOR PAL (AV) (DL-PA)
Y-D TIME FOR SECAM (AV) (DL-SA)
Y-D TIME FOR N358 (AV) (DL-3A)
Y-D TIME FOR N443 (AV) (DL-4A)
Y-D TIME FOR B/W (AV) (DL-AV)
OFFSET ADJ MODE
COLOUR OFFSET (PAL) (COL-OP)
COLOUR OFFSET (SECAM) (COL-OS)
COLOUR OFFSET (NTSC358) (COL-O3)
COLOUR OFFSET (NTSC443) (COL-O4)
SHARPNESS OFFSET (PAL) (SHP-OP)
SHARPNESS OFFSET (SECAM) (SHP-OS)
SHARPNESS OFFSET (NTSC358) (SHP-O3)
SHARPNESS OFFSET (NTSC443) (SHP-O4)
*(Y-D : Y-DELAY)
IC OPTION MODE
VERTICAL SCAN DISABLE (VSD)
BLACK STRETCH (BKS)
AUTO VOLUME LEVELING (AVL)
FAST FILTER IF-PLL (FFI)
ENABLE VERTICAL GUARD (EVG)
EHT TRACKING MODE (EHT)
OVERSCAN SWITCH OFF (OSO)
AUTO COLOUR LIMIT (ACL)
FORCED COLOUR LIMIT (FCO)
MISC. OPTION MODE
SOUND SYSTEM M (S-M)
SOUND SYSTEM DK (S-DK)
SOUND SYSTEM I (S-I)
SOUND SYSTEM BG (S-BG)
PLAYBACK SECAM (P-SECAM)
FF (RF) NTSC 3.58 (F-N358)
FF (RF) NTSC 4.43 (F-N443)
FF (RF) SECAM (F-SECAM)
VIDEO MUTE AT IDENT LOSS (VMI)
VIDEO MUTE AT PROGRAM /SOURCE CHANGE (VMC)
HOTEL MODE (HTL)
REDUCED FM DEMODULATION GAIN FOR BTSC SIGNAL (BTSC)
A
A
NUMBER OF EXT AV SOURCE (AV)
FM WINDOW SEVECTION (FMWS)
SOUND MUTE BIT 0 (SM0)
SOUND MUTE BIT 1 (SM1)
THAI LANGUAGE (THA)
ARABIC LANGUAGE (ARA)
MALAY LANGUAGE (MAL)
CHINESE LANGUAGE (CHI)
FRENCH LANGUAGE (FRE)
RUSSIAN LANGUAGE (RUS)
FORCED V-SYNC SLICING LEVEL (FSL)
SYNC OF OSD (HP2)
TUNER CPT (CPT)
B
B
BILINGUAL (BIL)
IF AGC SPEED BIT 0 (AGC 0)
IF AGC SPEED BIT 1 (AGC1)
FOA Time Constant-RF (FOA-FE)
FOB Time Constant-RF (FOB-FE)
FOA Time Constant-AV (FOA-AV)
FOB Time Constant-AV (FOB-AV)

The flow of Mode lists as following

Direct Key-in Step 1 Mode

RC COMMAND	SERVICE-ITEM
FUNCTION	AGC
CONTRAST DOWN	V-LIN
COLOUR DOWN	V-AMP
BRIGHTNESS DOWN	V-CENT
TINT DOWN	H-CENT
SHARPNESS DOWN	EW//
SYSTEM	HB
BLUEBACK	S-COR
TIMER	SUB-VOL
CONTRAST UP	SUB-CON
COLOUR UP	SUB-COL
BRIGHTNESS UP	SUB-BRI
TINT UP TINT	SUB-TINT
SHARPNESS UP	SUB-SHP
CHANNEL 1	DRI-GS
CHANNEL 4	DRI-BS
CHANNEL 7	CUT-R
CHANNEL FLASHBACK	CUT-G

AFTER SHORT JA 122 & JA 124, AND TURN ON THE MAIN POWER SWITCH, READ DATA
FROM EEPROM ADDRESS 00H ~ 03H, AND COMPARE TO THE LIST BELOW, IF DIFFERENT, INITIALIZE THE EEPROM.

ADDRESS	DATA	ADDRESS	DATA
00H:	55H	02H:	43H
01H:	4FH	03H:	A1H

EEPROM ITEMS	OSD	DATA LENGTH	INITIAL DATA	FIX/ADJ	REMARK
AGC TAKE OVER POINT	AGC	0~63	14	ADJ	
VERTICAL SLOPE	V-LIN	0~63	32	ADJ	
VERTICAL AMPLITUDE	V-AMP	0~63	32	ADJ	
VERTICAL SHIFT	V-CENT	0~63	32	ADJ	
HORIZONTAL SHIFT	H-CENT	0~63	32	ADJ	
S-CORRECTION	S-COR	0~63	0	FIX	
WHITE POINT RED STD WHITE TEMP	DRI-RS	0~63	32	FIX	
WHITE POINT GREEN STD WHITE TEMP	DRI-GS	0~63	32	ADJ	
WHITE POINT BLUE STD WHITE TEMP	DRI-BS	0~63	32	ADJ	
WHITE POINT RED WARM WHITE TEMP	DRI-RW	0~63	32	FIX	
WHITE POINT GREEN WARM WHITE TEMP	DRI-GW	0~63	32	FIX	(DRI-GS)-7 DATA
WHITE POINT BLUE WARM WHITE TEMP	DRI-BW	0~63	32	FIX	(DRI-BS)-7 DATA
WHITE POINT RED COOL WHITE TEMP	DRI-RC	0~63	25	FIX	(DRI-BS)-7 DATA
WHITE POINT GREEN COOL WHITE TEMP	DRI-GC	0~63	32	FIX	(DRI-GS)-7 DATA
WHITE POINT BLUE COOL WHITE TEMP	DRI-BC	0~63	32	FIX	(DRI-BS) SAME DATA
MAX VOLUME	SUB-VOL	0~63	63	FIX	
SUB CONTRAST	SUB-CON	0~63	63	FIX	
SUB COLOUR	SUB-COL	0~63	32	ADJ	
SUB BRIGHTNESS	SUB-BRI	0~63	32	ADJ	
SUB TINT	SUB-TINT	0~63	32	ADJ	
SUB SHARPNESS	SUB-SHP	0~63	32	FIX	
MAX HOTEL VOLUME	HTL-VOL	0~63	32	FIX	*1
HOTEL PROGRAM NUMBER	HTL-PRG	0~99 OR>99FOR NONE	255	FIX	
OSD GRB REFERENCE	RGB	0~15	15	FIX	
BLACK LEVEL OFF-SET R	CUT-R	0~15	8	FIX	
BLACK LEVEL OFF-SET B	CUT-G	0~15	8	FIX	
CATHODE DRIVE LEVEL	CDL	0~15	0	FIX	*2
Y-DELAY TIME FOR PAL(TV) [YD]	DL-PT	0~15	12	FIX	
Y-DELAY TIME FOR SECAM(TV) [YD]	DL-ST	0~15	15	FIX	
Y-DELAY TIME FOR N358 (TV) [YD]	DL-3T	0~15	12	FIX	
Y-DELAY TIME FOR N443 (TV) [YD]	DL-4T	0~15	12	FIX	
Y-DELAY TIME FOR B/W (TV) [YD]	DL-TV	0~15	12	FIX	
Y-DELAY TIME FOR PAL (AV) [YD]	DL-PA	0~15	12	FIX	
Y-DELAY TIME FOR SECAM (AV) [YD]	DL-SA	0~15	15	FIX	
Y-DELAY TIME FOR N358 (AV) [YD]	DL-3A	0~15	12	FIX	
Y-DELAY TIME FOR N443 (AV) [YD]	DL-4A	0~15	12	FIX	
Y-DELAY TIME FOR B/W (AV) [YD]	DL-AV	0~15	12	FIX	
COLOUR OFFSET (PAL)	COL-OP	0~15	8	FIX	
COLOUR OFFSET (SECAM)	COL-OS	0~15	8	FIX	
COLOUR OFFSET (NTSC358)	COL-O3	0~15	4	FIX	
COLOUR OFFSET (NTSC443)	COL-O4	0~15	4	FIX	
SHARPNESS OFFSET (PAL)	SHP-OP	0~15	8	FIX	
SHARPNESS OFFSET (SECAM)	SHP-OS	0~15	4	FIX	
SHARPNESS OFFSET (NTSC358)	SHP-O3	0~15	12	FIX	
SHARPNESS OFFSET (NTSC443)	SHP-O4	0~15	8	FIX	

EEPROM ITEMS	OSD	DATA LENGTH	INITIAL DATA	FIX/ADJ	REMARK
VERTICAL SCAN DISABLE	VSD	0(DISABLE)/1(ENABLE)	0	FIX	
BLACK STRETCH	BKS	0(DISABLE)/1(ENABLE)	1	FIX	
AUTOMATIC VOLUME LEVELING	AVL	0(DISABLE)/1(ENABLE)	1	FIX	
FAST FILTER IF-PLL	FFI	0(DISABLE)/1(ENABLE)	0	FIX	
ENABLE VERTICAL GUARD (RGB BLANKING)	EVG	0(DISABLE)/1(ENABLE)	1	FIX	ONLY BLK
EHT TRACKING MODE (HCO)	EHT	0(DISABLE)/1(ENABLE)	1	FIX	
OVERSCAN SWITCH OFF	OSO	0(DISABLE)/1(ENABLE)	0	FIX	
AUTO COLOUR LIMIT	ACL	0(DISABLE)/1(ENABLE)	0	FIX	
FORCED COLOUR LIMIT	FCO	0(DISABLE)/1(ENABLE)	0	FIX	
SOUND SYSTEM M	S-M	0(DISABLE)/1(ENABLE)	0	FIX	
SOUND SYSTEM DK	S-DK	0(DISABLE)/1(ENABLE)	1	FIX	*3
SOUND SYSTEM I	S-I	0(DISABLE)/1(ENABLE)	1	FIX	*3
SOUND SYSTEM BG	S-BG	0(DISABLE)/1(ENABLE)	1	FIX	
PLAYBACK SECAM	P-SECAM	0(DISABLE)/1(ENABLE)	1	FIX	*3
FE (RF) NTSC 3.58	F-N358	0(DISABLE)/1(ENABLE)	0	FIX	
FE (RF) NTSC 4.43	F-N443	0(DISABLE)/1(ENABLE)	1	FIX	*4
FE (RF) SECAM	F-SECAM	0(DISABLE)/1(ENABLE)	1	FIX	*5
VIDEO MUTE AT IDENT LOSS	VMI	0(DISABLE)/1(ENABLE)	1	FIX	
VIDEO MUTE AT PROGRAM/SOURCE CHANGE	VMC	0(DISABLE)/1(ENABLE)	1	FIX	
HOTEL MODE	HTL	0(DISABLE)/1(ENABLE)	0	FIX	
REDUCED FM DEMODULATOR GAIN FOR BTSC SIGNAL	BTSC	0(DISABLE)/1(ENABLE)	0	FIX	
NUMBER OF EXTERNAL AV SOURCE	AV	0 FOR1 AV/1 FOR 2AV	1	ADJ	*6
FM WINDOW SELECTION	FMWS	0(DISABLE)/1(ENABLE)	0	FIX	
SOUND MUTE BIT 0	SM0	0(DISABLE)/1(ENABLE)	1	FIX	
SOUND MUTE BIT 1	SM1	0(DISABLE)/1(ENABLE)	0	FIX	
THAI LANGUAGE	THA	0(DISABLE)/1(ENABLE)	0	FIX	*7
ARABIC LANGUAGE	ARA	0(DISABLE)/1(ENABLE)	1	FIX	*3
MALAY LANGUAGE	MAL	0(DISABLE)/1(ENABLE)	1	FIX	*3
CHINESE LANGUAGE	CHI	0(DISABLE)/1(ENABLE)	1	FIX	*3
FRENCH LANGUAGE	FRE	0(DISABLE)/1(ENABLE)	1	FIX	*3
RUSSIAN LANGUAGE	RUS	0(DISABLE)/1(ENABLE)	1	FIX	*3
FORCED V-SYNC SLICING LEVEL	FSL	0(DISABLE)/1(ENABLE)	0	FIX	
SYNC OF OSD	HP2	0(DISABLE)/1(ENABLE)	0	FIX	
TUNER CPT	CPT	0(DISABLE)/1(ENABLE)	0	FIX	
BILINGUAL	BIL	0(DISABLE)/1(ENABLE)	0	ADJ	*8
IF AGC SPEED BIT 0	AGC0	0(DISABLE)/1(ENABLE)	1	FIX	
IF AGC SPEED BIT 1	AGC1	0(DISABLE)/1(ENABLE)	0	FIX	
PHI-1 TIME CONSTANT (RF)	FOA-FE	0(DISABLE)/1(ENABLE)	0	FIX	
PHI-1 TIME CONSTANT (RF)	FOB-FE	0(DISABLE)/1(ENABLE)	0	FIX	
PHI-1 TIME CONSTANT (OFF AIR)	FOA-AV	0(DISABLE)/1(ENABLE)	1	FIX	
PHI-1 TIME CONSTANT (OFF AIR)	FOB-AV	0(DISABLE)/1(ENABLE)	1	FIX	

NOTE :
FIXED DATA, PLEASE DO NOT CHANGE WITHOUT SPECIFIC INSTRUCTION.

*1: UNLESS CUSTOMER REQUEST, OR ELSE FIX THE ADJUSTMENT.
*2: CDL DATA=2 , FOR 20" & 21" ONLY
*3: MANUAL CHANGE TO '0'
*4: MANUAL CHANGE TO '0'
*5: MANUAL CHANGE TO '0'
*6: IF 1 AV-OUT, SET TO '0'
IF 2 AV-OUT, SET '1'
*7: MANUAL CHANGE TO '1'
*8: IF BILINGUAL MODEL PLEASE CHANGE TO '1'

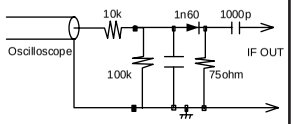
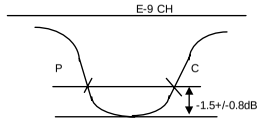
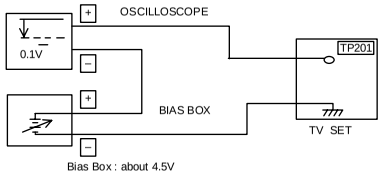
SHIPPING SETTING & CHECKING

(1) The following default data has been factory-set for the E2PROM.

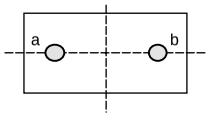
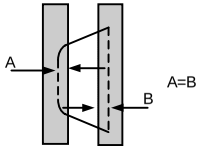
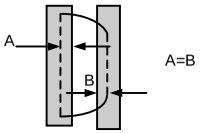
ITEMS	DATA SETTING
LAST PROGRAM/CHANNEL	1
FLASHBACK PROGARM/CH	1
DIGIT	1
C-SYSTEM	AUTO
S-SYSTEM *1	B/G
SKIP	OFF
AFC	ON
VOLUME	1
CONTRAST	60 (MAX)
COLOUR	0 (CENTER)
BRIGHTNESS	0 (CENTER)
TINT	0 (CENTER)
SHARPNESS	0 (CENTER)
WHITE TEMP	STANDARD
REMINDER TIMER	In-active, ”—:—”
ON TIMER	In-active, ”—:—”
OFF TIMER	In-active, ”—:—”
LAST POWER	POWER-ON
LANGUAGE *1	THAI
BLUE BACK MUTE	OFF
HOTEL MODE	OFF

*1: PLEASE CHANGE IT BY REMOTE CONTROL

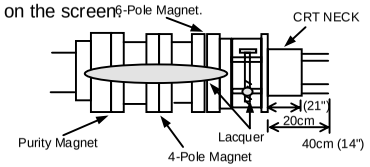
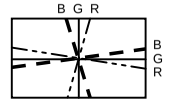
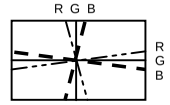
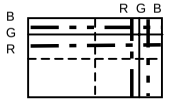
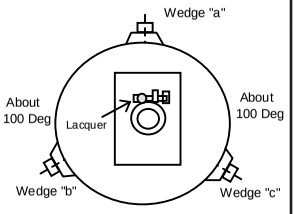
PIF ADJUSTMENT CHECKING

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	Tuner IFT (PRESET)	(1) Get the tuner ready to receive the CH. E - 9 signal, but with no signal input. Adjust the PLL data. (2) Connect the sweep generator's output cable to the tuner antenna. (RF SWEEP) (3) Adjust the sweep generator's to 80dBuV. (4) Connect the response lead (use LOW IMPEDANCE probe with wave detector ; see Fig.1) to the tuner's IF output terminal. (This terminal must have the probe alone connected). (5) Set the RF AGC to 0 - 6 V with no saturation with the waveform. (6) Adjust the tuner IF coil to obtain the waveform as shown in Fig. 2. Note : Be sure to keep the tuner cover in position during this adjustment.	 **Fig. 1**  **Fig. 2**
2	RF-AGC TAKE OVER POINT ADJUSTMENT (I2C BUS CONTROL)	(1) Receive "PAL COLOR BAR" signal. Signal Strength: 57 ± 1dBμV (75 ohm open) (2) Connect the oscilloscope to TP201 (Tuner's AGC Terminal) as shown in Fig 3-1.  **Fig. 3-1** (3) Call "AG" mode in service mode. Adjust the "AG" bus data to obtain the Tuner output pin drop 0.1V below maximum voltage. (4) Change the antenna input signal to 63 ~ 67dBμV, and make sure there is no noise. (5) Turn up the input signal to 90 ~ 95 dBμB to be sure that there is no cross modulation beat.	Note : For the 50 ohm signal strength gauge, when not using 50/75 impedance adapter, signal strength is 52 ± 1dBμV (75 ohm open), instead of 57 ± 1dBμV (75 ohm open). Precaution : The loss of using impedance adapter.

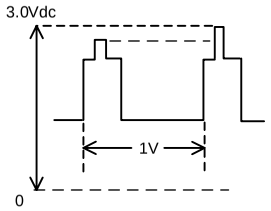
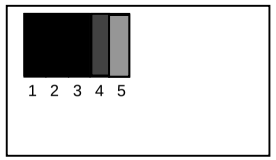
PURITY ADJUSTMENT

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	PURITY ADJ.	(1) Receive the GREEN -ONLY signal. Adjust the beam current to ~700μA (21"&20")/ ~500μA(14"). (2) Maintain the purity magnet at the zero magnetic field and keep the static convergence roughly adjusted. (3) Observe the points a, b, as shown in Fig. 1-1 through the microscope. Adjust the landings to A rank requirement. (4) Orient the raster rotation to 0 eastward. (5) Tighten up the deflection coil screws. Tightening torque : 108N ± 20N (11Kgf ± 2Kgf) (6) Make sure the CRT corners landing meet the A rank requirements. If not, stick the magnet sheet to correct it. Note : This adjustment must be done after warming up the unit for 30 minutes or longer with a beam current over 700μA. (For 14", the beam current should be over 500μA).	 **Fig. 1-1**  **Fig. 1-2 Rank A (On the right of CRT)**  **Fig. 1-3 Rank A (On the left of CRT)**

CONVERGENCE ADJUSTMENT

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	CONVERGENC ADJ (To be done after the purity adjustment.	(1) Receive the "Crosshatch Pattern" signal. (2) Using the remote controller, call NORMAL mode. (Static convergence) (1) Turn the 4 - pole magnet to a proper opening angle in order to superpose the blue and red colours. (2) Turn the 6 - pole magnet to a proper opening angle in order to superpose the green colour over the blue and red colours. (Dynamic convergence) (1) Adjust the convergence on the fringes of the screen in the following steps. a) Fig. a : Drive the wedge at point " a " and swing the deflection coil upward. b) Fig. b : Drive the wedge at point " b " and " c " and swing the deflection coil downward. c) Fig. c : Drive the " c " wedge deeper and swing the deflection coil rightward. d) Fig. d : Drive the " b " wedge deeper and swing the deflection coil leftward. (2) Fix all the wedges on the CRT and apply glass tape over them. (3) Apply lacquer to the deflection yoke lock screw, magnet unit (purity, 4 - pole, 6 - pole magnets) and magnet unit lock screw. Finally received the Red - only and Blue - only signals to make sure there is no other colours on the screen. 	 **Fig. a**  **Fig. b**  **Fig. c** **Fig. d** 

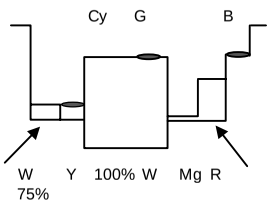
CUT OFF, BKGD, SUB-CONT ADJUSTMENT.

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	CRT CUTOFF ADJUSTMENT (I2C BUS CONTROL)	(1) Switch TV to VIDEO mode, BLUE BACK OFF, with NO VIDEO signal. (2) Press R/C to set Picture Normal condition. (3) Connect the oscilloscope to Red OUT from IC801. (TP851) Range : 1 V/Div (DC) Sweep : 5 msec/Div (3) Adjust SCREEN VR, so that the tip of signal reach 3.0 Vdc ± 0.1 Vdc.	
2	SUB-BRIGHTNESS ADJUSMENT (I2C BUS CONTROL)	(1) Call "SUB-BRI" in service mode. (Receive Crosshatch pattern with 5 black level windows) (2) Adjust the "SUB BRIGHT" bus data in order that the line 1, 2 and 3 have the same darkness wherelse line 4 is slightly brighter than line 1, 2 and 3 and finally line 5 will be the brighter than line 4.	 1, 2, 3 are in same black level.
3	WHITE BALANCE SERVICE MODE ADJ (I2C BUS CONTROL)	(1) Receive the "WHITE" Pattern with BURST signal. (2) Press R/C to set Picture NORMAL condition. (3) Connect the DC miliammeter between the TP602 (-) TP 603 (+). (4) Check Beam current should be around 1100μA. (20"/21") (14" around 800μA). (5) Set it to service mode and adjust the DRI-GS, DRI-BS data to have a colour temperature of 12,300°K . * Note . (6) Receive "WHITE" pattern, WITH BURST signal, and set Brightness Y by generator, to ** 10 cd/m2 (Minolta CA-100) by reducing Luminate Y signal. (7) Adjust "CUT-R" & "CUT-G" to get 12,300°K. Then go back normal mode (High Bright**) to check colour temperature. If out of range, back to (1). Note : This adjustment must be done after warming up the unit for 30 minutes or longer with a beam current over 700μA. (For 14", the beam current should be over 500μA). * ADJUST DRI-GC/GW, DRI-BC/BW AS FOLLOWING DATA AFTER FINISHING DRI-GS AND DRI-BS. DRI-GC/GW DATA = "DRI-GS"-7 DATA DRI-RC = 25; DRI-BC = DRI-BS; DRI-RW = 32 DRI-BW DATA = "DRI-BS" -7 DATA	Refer to **SHIPPING SETTING & CHECKING**. # 12300°K X : 0.272 Y : 0.275 (MINOLTA COLOUR ANALYZER CA-100) *Note: Above Data can be UP/DOWN by Volume key. Low High 14" 10cd/m2 200cd/m2 20"/21" 10cd/m2 120cd/m2
4	Max Beam Check	(1) Receive the "Monoscope Pattern" signal. (2) Press R/C to set Picture NORMAL condition. (3) Connect the DC miliammeter between TP603 (+) & TP 602 (-) (Full Scale: 3mA Range) (4) Beam current must be within 1100 ± 100μA (21") 800 ± 100μA (14")	

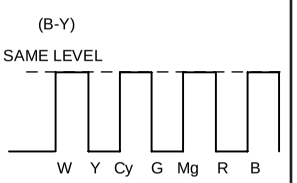
HORIZONTAL, VERTICAL, DEFLECTION LOOP and FOCUS ADJUSTMENT

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	V-SLOPE (I2C BUS CONTROL)	(1) Receive PAL 50Hz Monoscope Pattern Signal (2) Call the "V-LIN" mode. (3) Increase or decrease "V-LIN" by Volume key till the horizontal line in the center of monoscope is just at the position where the blanking starts.	
2	V-SHIFT (I2C BUS CONTROL)	(1) Call the "V-CENT" mode. (2) Increase or decrease "V-CENT" by Volume key till the picture is centered.	
3	V - AMP (I2C BUS CONTROL)	(1) Call the "V-AMP" mode. (2) Increase or decrease "V - AMP" by Volume key to set overscan of 8.5% typical. Adjustment Spec 8.5% range +1% -0%.	
4	S-CORRECTION (I2C BUS CONTROL)	FIXED DATA, NO NEED TO ADJUST.	
5	H- SHIFT (50) (H - CENTER) (I2C BUS CONTROL)	(1) Call the "H-CENT" mode. (2) Increase or decrease "H-CENT" by Volume key to center the picture horizontal.	
1	Focus	(1) Receive the "Monoscope Pattern" signal. (2) Press R/C to set Picture NORMAL condition. (3) Adjust the focus control to get the best focusing.	

PAL CHROMA ADJUSTMENT

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	SUB COLOUR (I2C BUS CONTROL)	(1) Receive the "PAL Colour Bar" signal. (2) Press R/C to set Picture Normal condition. (3) Connect the oscilloscope to Red cathode. (TP854) Range : 20 V/Div (AC) (Using 10:1 Probe) Sweep Time : 10 μsec/Div (4) Using the R/C call "SUB COL" in SERVICE mode. Adjust SUB COLOUR bus data, so that the 75% White & Red portions of PAL Color Bar be at the same level shown as Fig. 1-1. (5) Clear the SERVICE mode.	 **Fig. 1-1**

NTSC CHROMA ADJUSTMENT

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	SUB-TINT (I2C BUS CONTROL)	(1) Receive the "NTSC 3.58 Color Bar" signal thru AV in. (2) Connect the oscilloscope to TP853 (P882 pin5) BLUE-OUT. Range : 1V/Div (AC) (Use Probe 10:1) Sweep time : 10μsec/Div (3) Call the "SUB-TINT" mode in service mode. Adjust the "SUB-TINT" bus data to obtain the waveform shown as Fig. 1-1. (4) Clear the SERVICE mode.	 **Fig. 1-1**

PROTECTOR OPERATION CHECKING

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	BEAM PROTECTOR	(1) Receive "Monoscope Pattern" signal. (2) Set CONTRAST MAX. (3) Set BRIGHT MAX. (4) During the Collector & Emitter of Q883/5/7 short, make sure the protector ON and switch to standby mode.	* Select one of Q883/5/7 to do each short test.
2	H, V PROTECTOR	(1) Receive "Monoscope Pattern" signal. (2) Connect output of Bias Box to D607 cathode (R606 side). (3) Set voltage of Bias Box to 18V and make sure the protector is not work. (4) Set voltage of Bias Box to 27V, and make sure the protector functions.	
3	OTHER PROTECTOR	(1) Once finish rectified Electrolytic Capacitor short testing in + B line, check all possible damaged components on +B line. (Use random selected set for inspection)	

A/V INPUT AND OUTPUT CHECKING

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	VIDEO AND AUDIO OUTPUT CHECK	(1) Receive the "PAL Color Bar" signal (100% White Color Bar, Sound 400 Hz 100% Mod). (2) Terminate the Video output with a 75 ohm impedance. Make sure the output is as specified (1.0 Vp-p ± 3 dB) (3) Terminate the Audio output with a 10 Kohm impedance. Make sure the O/P is as specified (1.76 Vp-p ± 3 dB)	
2	VIDEO AND AUDIO INPUT CHECK	(1) Using the TV/AV key on the remote controller, make sure that the modes change in order of TV, AV1, AV2 & TV again and the video & audio output are according to the input terminal for each mode.	

FUNCTION OPERATION CHECKING (1) (VIDEO & AUDIO)

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	CONTRAST Key	(1) Receive "Monoscope Pattern" signal. (2) Set P-Mode to select CONTRAST. (3) Press Volume Up/Down key to check whether the CONTRAST effect is OK or not.	
2	COLOUR Key	(1) Receive "Color Bar" signal. (2) Set P-Mode to select COLOUR. (3) Press Volume Up/Down key to check whether the COLOUR effect is OK or not.	
3	BRIGHTNESS Key	(1) Receive "Monoscope Pattern" signal. (2) Set P-Mode to select BRIGHTNESS. (3) Press Volume Up/Down key to check whether the BRIGHTNESS effect is OK or not.	
4	TINT Key	(1) Receive the "NTSC Colour Bar" signal thru AV in. (2) Set P-Mode to select TINT. (3) Press Volume Up/Down key to check TINT, UP for GREEN direction and DOWN for PURPLE direction whether is OK or not.	
5	SHARPNESS Key	(1) Receive "Monoscope Pattern" signal. (2) Set P-mode to select SHARPNESS. (3) Press Volume Up/Down key to check whether the SHARPNESS effect is OK or not.	
6	CH DISPLAY COLOUR	(1) All Ch (1~99) will have an OSD display of the channel number in green colour under AFT ON condition.	
7	NORMAL Key	(1) Once in PICTURE Mode, and the NORMAL key is pressed, all the settings will be present to normal setting. (Normal setting value for every mode). CONTRAST : MAX COLOUR : CENTER BRIGHTNESS : CENTER TINT : CENTER SHARPNESS : CENTER	
8	WHITE TEMP	(1) Receive "Monoscope Pattern" signal. (2) Set FUNCTION to select WHITE TEMP. (3) Press Volume Up/Down key to check WHITE TEMP Option, STANDARD: NORMAL SETTING, WARM for more REDDISH direction changing, COOL for more BLUISH direction changing.	
9	COLOUR SYSTEM	(1) Receive the "PAL COLOUR BAR" signal, press the COLOUR SYSTEM key to select modes except PAL, check the COLOUR is not working properly. Then, select the "PAL" mode. Check again its colour so that it is working properly. (2) Receive "NTSC 4.43/3.58 COLOUR BAR" signal thru AV, press COLOUR SYSTEM key to select modes except N4.43/3.58, check the COLOUR is not working properly. Then, select the "NTSC 4.43/3.58" mode. Check again its colour so that it is working properly.	

FUNCTION OPERATION CHECKING (2) (VIDEO & AUDIO)

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
10	SOUND SYSTEM	(1) Receive "PAL-B/G" signal, check the sound output is working properly or not.	
11	NOISE MUTE CHECKING	(1) Receive "PAL COLOUR BAR" signal. (2) Turn up the volume control to maximum, make sure the sound is heard from the speakers. Then put the unit in no signal state. (3) Check the sound mute is effective. (4) Finally turn sound level of CTV to minimum.	
12	OSD LANGUAGE QUANTITY CHECK	Check OSD LANGUAGE quantity and type.	

HEADPHONE JACK CHECKING (FOR HEADPHONE MODELS ONLY)

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	HEADPHONE OUTPUT CHECKING	(1) Receive PAL COLOUR BAR with SOUND 400Hz, 100% MODULATION (± 50kHz Dev) (2) Maximum volume, and check the headphone output with 400Hz sound and no sound out from speaker.	

BILINGUAL CHECKING (FOR BILINGUAL MODELS ONLY)

NO	ADJUSTMENT POINT	ADJUSTMENT CONDITION / PROCEDURE	WAVEFORM OR OTHERS
1	BILINGUAL FUNCTION CHECKING	(1) Receive bilingual channel. (2) Press R/C "MPX" pin, and the sound will change from SOUND 1 to SOUND 2.	

MEMORY MAP

MODEL :	TV MICOM ENGINEERING		TV DESIGN ENGINEERING		TV PRODUCTION ENGINEERING	
	ISSUED DATE :		ISSUED DATE :		ISSUED DATE :	
PROCESS	MANAGER		MANAGER		MANAGER	
EEPROM CHECK DATA LIST 1	CHIEF		CHIEF		CHIEF	
	ENGINEER		ENGINEER		ENGINEER	

SLAVE ADDRESS : A0 (00~FF) A2 (100~1FF)

ADDRESS	DATA								MICON	EEPROM	EEPROM	CHASSIS		CTV FINAL		LAST INITIAL	
(HEX)	D7	D6	D5	D4	D3	D2	D1	D0	DEFAULT	RANGE	WRITE(CPU)	CHECK DATA	CHECK TYPE	CHECK DATA	CHECK TYPE	SETTING DATA	REMARK
00	PASS WORD								55	00-FF							
01	PASS WORD								4F	00-FF							
02	PASS WORD								43	00-FF							
03	PASS WORD								A1	00-FF							
04																	
05																	
06	AGC TAKE-OVER								0E	00-3F							
07	V-SLOPE								20	00-3F							
08	V-AMPLITUDE								20	00-3F							
09	V-CENTER								20	00-3F							
0A	H-CENTER								20	00-3F							
0B	H-SIZE								20	00-3F							
0C	EW-PARALLELOGRAM								20	00-3F							
0D	EW-PARABOLA/WIDTH								20	00-3F							
0E	EW-UPPER CORNER								20	00-3F							
0F	EW-LOWER CORNER								20	00-3F							
10	EW-TRAPEZIUM								20	00-3F							
11	HORIZONTAL-BOW								20	00-3F							
12	S-CORRECTION								00	00-3F							
13																	
14																	
15																	
16	DRIVE-R (STANDARD)								20	00-3F							
17	DRIVE-G (STANDARD)								20	00-3F							
18	DRIVE-B (STANDARD)								20	00-3F							
19	DRIVE-R (WARM)								20	00-3F							
1A	DRIVE-G (WARM)								20	00-3F							
1B	DRIVE-B (WARM)								20	00-3F							
1C	DRIVE-R (COOL)								19	00-3F							
1D	DRIVE-G (COOL)								20	00-3F							
1E	DRIVE-B (COOL)								20	00-3F							
1F																	
20																	
21																	
22	SUB-VOLUME								3F	00-3F							
23	SUB-CONTRAST								3F	00-3F							
24	SUB-COLOUR								20	00-3F							
25	SUB-BRIGHTNESS								20	00-3F							
26	SUB-TINT								20	00-3F							
27	SUB-SHARPNESS								20	00-3F							
28	HTL-VOLUME								20	00-3F							
29	HTL-POSITION								FF	00-FF							
2A																	
2B																	
2C																	
2D	OSD-REFERENCE								0F	00-0F							
2E	CUTOFF LEVEL-OFFSET R								08	00-0F							
2F	CUTOFF LEVEL-OFFSET B								08	00-0F							
30	CATHODE DRIVE LEVEL								00	00-0F							
31	Y-DELAY (TV PAL)								0C	00-0F							
32	Y-DELAY (TV SECAM)								0F	00-0F							
33	Y-DELAY (TV N358)								0C	00-0F							
34	Y-DELAY (TV N443)								0C	00-0F							
35	Y-DELAY (TV BW)								0C	00-0F							
36	Y-DELAY (AV PAL)								0C	00-0F							
37	Y-DELAY (AV SECAM)								0F	00-0F							
38	Y-DELAY (AV N443)								0C	00-0F							
39	Y-DELAY (AV N358)								0C	00-0F							
3A	Y-DELAY (AV BW)								0C	00-0F							
3B	COLOUR-OFFSET (PAL)								08	00-0F							
3C	COLOUR-OFFSET (SECAM)								08	00-0F							
3D	COLOUR-OFFSET (N443)								04	00-0F							
3E	COLOUR-OFFSET (N358)								04	00-0F							
3F	SHARPNESS-OFFSET (PAL)								08	00-0F							
40	SHARPNESS-OFFSET (SECAM)								04	00-0F							
41	SHARPNESS-OFFSET (N443)								0C	00-0F							
42	SHARPNESS-OFFSET (N358)								08	00-0F							
43																	
44	FCO	ACL	OSO	EHT	EVG	FFI	AVL	BKS		00-FF							
45	SCM	N443	N358	PB-SEC	BG	I	DK	M		00-FF							
46	SM		FMWS	AV	BTSC	HTL	VMC	VMI		00-FF							
47	HP2	FSL	RUS	FRA	CHN	MLY	ARB	THA		00-FF							
48	AGC						BIL	OBA									
49																	
4A																	
4B																	
4C	VOLUME								01	00-3C							
4D	CONTRAST								3C	00-3C							
4E	COLOUR								1E	00-3C							
4F	BRIGHTNESS								1E	00-3C							
50	TINT								1E	00-3C							
51	SHARPNESS								1E	00-3C							
52																	
53																	
54																	
55	POSITION/AV1/AV2								01	00-FF							
56	FAV-POS A								0A	00-FF							
57	FAV-POS B								14	00-FF							
MODEL										MODEL							
LETTER NO.										LETTER NO.							

MEMORY MAP (Continued)

MODEL :	TV MICOM ENGINEERING	TV DESIGN ENGINEERING	TV PRODUCTION ENGINEERING
	ISSUED DATE :	ISSUED DATE :	ISSUED DATE :
PROCESS	MANAGER	MANAGER	MANAGER
EEPROM CHECK DATA LIST 2	CHIEF	CHIEF	CHIEF
	ENGINEER	ENGINEER	ENGINEER

SLAVE ADDRESS : A0 (00~FF) A2 (100~1FF)

ADDRESS	DATA								MICON	EEPROM	EEPROM	CHASSIS		CTV FINAL		LAST INITIAL	
(HEX)	D7	D6	D5	D4	D3	D2	D1	D0	DEFAULT	RANGE	WRITE(CPU)	CHECK DATA	CHECK TYPE	CHECK DATA	CHECK TYPE	SETTING DATA	REMARK
58	FAV-POS C								1E	00-FF							
59	FAV-POS D								28	00-FF							
5A																	
5B																	
5C	POWER								00	00-01							
5D	WHITE-TEMP								00	00-02							
5E	BLUE BACK								00	00-01							
5F	LANGUAGE								00	00-07							
60	DIGIT								00	00-01							
61																	
62	SKIP 0	SKIP 1	SKIP 2	SKIP 3	SKIP 4	SKIP 5	SKIP 6	SKIP 7	80	00-FF							
63	SKIP 8	SKIP 9	SKIP 10	SKIP 11	SKIP 12	SKIP 13	SKIP 14	SKIP 15	00	00-FF							
64	SKIP 16	SKIP 17	SKIP 18	SKIP 19	SKIP 20	SKIP 21	SKIP 22	SKIP 23	00	00-FF							
65	SKIP 24	SKIP 25	SKIP 26	SKIP 27	SKIP 28	SKIP 29	SKIP 30	SKIP 31	00	00-FF							
66	SKIP 32	SKIP 33	SKIP 34	SKIP 35	SKIP 36	SKIP 37	SKIP 38	SKIP 39	00	00-FF							
67	SKIP 40	SKIP 41	SKIP 42	SKIP 43	SKIP 44	SKIP 45	SKIP 46	SKIP 47	00	00-FF							
68	SKIP 48	SKIP 49	SKIP 50	SKIP 51	SKIP 52	SKIP 53	SKIP 54	SKIP 55	00	00-FF							
69	SKIP 56	SKIP 57	SKIP 58	SKIP 59	SKIP 60	SKIP 61	SKIP 62	SKIP 63	00	00-FF							
6A	SKIP 64	SKIP 65	SKIP 66	SKIP 67	SKIP 68	SKIP 69	SKIP 70	SKIP 71	00	00-FF							
6B	SKIP 72	SKIP 73	SKIP 74	SKIP 75	SKIP 76	SKIP 77	SKIP 78	SKIP 79	00	00-FF							
6C	SKIP 80	SKIP 81	SKIP 82	SKIP 83	SKIP 84	SKIP 85	SKIP 86	SKIP 87	00	00-FF							
6D	SKIP 88	SKIP 89	SKIP 90	SKIP 91	SKIP 92	SKIP 93	SKIP 94	SKIP 95	00	00-FF							
6E	SKIP 96	SKIP 97	SKIP 98	SKIP 99					00	00-FF							
6F																	
70																	
71																	
72																	
73																	
74	TUNING FREQUANCY (HIGHER PART)										S-SYS						POS 0
75	TUNING FREQUANCY (LOWER PART)										000:BG						
76	S-SYS			AFT		(auto)		C-SYS			001:I						
77	TUNING FREQUANCY (HIGHER PART)										010:DK						POS 1
78	TUNING FREQUANCY (LOWER PART)										011:M						
79	S-SYS			AFT		(auto)		C-SYS									
7A	TUNING FREQUANCY (HIGHER PART)										AFT						POS 2
7B	TUNING FREQUANCY (LOWER PART)										0:OFF						
7C	S-SYS			AFT		(auto)		C-SYS			1:ON						
7D	TUNING FREQUANCY (HIGHER PART)																POS 3
7E	TUNING FREQUANCY (LOWER PART)																
7F	S-SYS			AFT		(auto)		C-SYS									
80	TUNING FREQUANCY (HIGHER PART)																POS 4
81	TUNING FREQUANCY (LOWER PART)																
82	S-SYS			AFT		(auto)		C-SYS									
83	TUNING FREQUANCY (HIGHER PART)																POS 5
84	TUNING FREQUANCY (LOWER PART)																
85	S-SYS			AFT		(auto)		C-SYS									
86	TUNING FREQUANCY (HIGHER PART)																POS 6
87	TUNING FREQUANCY (LOWER PART)																
88	S-SYS			AFT		(auto)		C-SYS									
89	TUNING FREQUANCY (HIGHER PART)																POS 7
8A	TUNING FREQUANCY (LOWER PART)																
8B	S-SYS			AFT		(auto)		C-SYS									
8C	TUNING FREQUANCY (HIGHER PART)																POS 8
8D	TUNING FREQUANCY (LOWER PART)																
8E	S-SYS			AFT		(auto)		C-SYS									
8F	TUNING FREQUANCY (HIGHER PART)																POS 9
90	TUNING FREQUANCY (LOWER PART)																
91	S-SYS			AFT		(auto)		C-SYS									
92	TUNING FREQUANCY (HIGHER PART)																POS 10
93	TUNING FREQUANCY (LOWER PART)																
94	S-SYS			AFT		(auto)		C-SYS									
95	TUNING FREQUANCY (HIGHER PART)																POS 11
96	TUNING FREQUANCY (LOWER PART)																
97	S-SYS			AFT		(auto)		C-SYS									
98	TUNING FREQUANCY (HIGHER PART)																POS 12
99	TUNING FREQUANCY (LOWER PART)																
9A	S-SYS			AFT		(auto)		C-SYS									
9B	TUNING FREQUANCY (HIGHER PART)																POS 13
9C	TUNING FREQUANCY (LOWER PART)																
9D	S-SYS			AFT		(auto)		C-SYS									
9E	TUNING FREQUANCY (HIGHER PART)																POS 14
9F	TUNING FREQUANCY (LOWER PART)																
A0	S-SYS			AFT		(auto)		C-SYS									
A1	TUNING FREQUANCY (HIGHER PART)																POS 15
A2	TUNING FREQUANCY (LOWER PART)																
A3	S-SYS			AFT		(auto)		C-SYS									
A4	TUNING FREQUANCY (HIGHER PART)																POS 16
A5	TUNING FREQUANCY (LOWER PART)																
A6	S-SYS			AFT		(auto)		C-SYS									
A7	TUNING FREQUANCY (HIGHER PART)																POS 17
A8	TUNING FREQUANCY (LOWER PART)																
A9	S-SYS			AFT		(auto)		C-SYS									
AA	TUNING FREQUANCY (HIGHER PART)																POS 18
AB	TUNING FREQUANCY (LOWER PART)																
AC	S-SYS			AFT		(auto)		C-SYS									
AD	TUNING FREQUANCY (HIGHER PART)																POS 19
AE	TUNING FREQUANCY (LOWER PART)																
AF	S-SYS			AFT		(auto)		C-SYS									
	MODEL									MODEL							
	LETTER NO.									LETTER NO.							

MEMORY MAP (Continued)

MODEL :	TV MICOM ENGINEERING		TV DESIGN ENGINEERING		TV PRODUCTION ENGINEERING	
	ISSUED DATE :		ISSUED DATE :		ISSUED DATE :	
PROCESS	MANAGER		MANAGER		MANAGER	
EEPROM CHECK DATA LIST 3	CHIEF		CHIEF		CHIEF	
	ENGINEER		ENGINEER		ENGINEER	

SLAVE ADDRESS : A0 (00~FF) A2 (100~1FF)

ADDRESS	DATA								MICON	EEPROM	S-SYS	CHASSIS		CTV FINAL		LAST INITIAL	POS 0
(HEX)	D7	D6	D5	D4	D3	D2	D1	D0	DEFAULT	RANGE	WRITE(CPU)	CHECK DATA	CHECK TYPE	CHECK DATA	CHECK TYPE	SETTING DATA	REMARK
B0	TUNING FREQUANCY (HIGHER PART)																POS 20
B1	TUNING FREQUANCY (LOWER PART)																
B2	S-SYS			AFT		(auto)		C-SYS									
B3	TUNING FREQUANCY (HIGHER PART)																POS 21
B4	TUNING FREQUANCY (LOWER PART)																
B5	S-SYS			AFT		(auto)		C-SYS									
B6	TUNING FREQUANCY (HIGHER PART)																POS 22
B7	TUNING FREQUANCY (LOWER PART)																
B8	S-SYS			AFT		(auto)		C-SYS									
B9	TUNING FREQUANCY (HIGHER PART)																POS 23
BA	TUNING FREQUANCY (LOWER PART)																
BB	S-SYS			AFT		(auto)		C-SYS									
BC	TUNING FREQUANCY (HIGHER PART)																POS 24
BD	TUNING FREQUANCY (LOWER PART)																
BE	S-SYS			AFT		(auto)		C-SYS									
BF	TUNING FREQUANCY (HIGHER PART)																POS 25
C0	TUNING FREQUANCY (LOWER PART)																
C1	S-SYS			AFT		(auto)		C-SYS									
C2	TUNING FREQUANCY (HIGHER PART)																POS 26
C3	TUNING FREQUANCY (LOWER PART)																
C4	S-SYS			AFT		(auto)		C-SYS									
C5	TUNING FREQUANCY (HIGHER PART)																POS 27
C6	TUNING FREQUANCY (LOWER PART)																
C7	S-SYS			AFT		(auto)		C-SYS									
C8	TUNING FREQUANCY (HIGHER PART)																POS 28
C9	TUNING FREQUANCY (LOWER PART)																
CA	S-SYS			AFT		(auto)		C-SYS									
CB	TUNING FREQUANCY (HIGHER PART)																POS 29
CC	TUNING FREQUANCY (LOWER PART)																
CD	S-SYS			AFT		(auto)		C-SYS									
CE	TUNING FREQUANCY (HIGHER PART)																POS 30
CF	TUNING FREQUANCY (LOWER PART)																
D0	S-SYS			AFT		(auto)		C-SYS									
D1	TUNING FREQUANCY (HIGHER PART)																POS 31
D2	TUNING FREQUANCY (LOWER PART)																
D3	S-SYS			AFT		(auto)		C-SYS									
D4	TUNING FREQUANCY (HIGHER PART)																POS 32
D5	TUNING FREQUANCY (LOWER PART)																
D6	S-SYS			AFT		(auto)		C-SYS									
D7	TUNING FREQUANCY (HIGHER PART)																POS 33
D8	TUNING FREQUANCY (LOWER PART)																
D9	S-SYS			AFT		(auto)		C-SYS									
DA	TUNING FREQUANCY (HIGHER PART)																POS 34
DB	TUNING FREQUANCY (LOWER PART)																
DC	S-SYS			AFT		(auto)		C-SYS									
DD	TUNING FREQUANCY (HIGHER PART)																POS 35
DE	TUNING FREQUANCY (LOWER PART)																
DF	S-SYS			AFT		(auto)		C-SYS									
E0	TUNING FREQUANCY (HIGHER PART)																POS 36
E1	TUNING FREQUANCY (LOWER PART)																
E2	S-SYS			AFT		(auto)		C-SYS									
E3	TUNING FREQUANCY (HIGHER PART)																POS 37
E4	TUNING FREQUANCY (LOWER PART)																
E5	S-SYS			AFT		(auto)		C-SYS									
E6	TUNING FREQUANCY (HIGHER PART)																POS 38
E7	TUNING FREQUANCY (LOWER PART)																
E8	S-SYS			AFT		(auto)		C-SYS									
E9	TUNING FREQUANCY (HIGHER PART)																POS 39
EA	TUNING FREQUANCY (LOWER PART)																
EB	S-SYS			AFT		(auto)		C-SYS									
EC	TUNING FREQUANCY (HIGHER PART)																POS 40
ED	TUNING FREQUANCY (LOWER PART)																
EE	S-SYS			AFT		(auto)		C-SYS									
EF	TUNING FREQUANCY (HIGHER PART)																POS 41
F0	TUNING FREQUANCY (LOWER PART)																
F1	S-SYS			AFT		(auto)		C-SYS									
F2	TUNING FREQUANCY (HIGHER PART)																POS 42
F3	TUNING FREQUANCY (LOWER PART)																
F4	S-SYS			AFT		(auto)		C-SYS									
F5	TUNING FREQUANCY (HIGHER PART)																POS 43
F6	TUNING FREQUANCY (LOWER PART)																
F7	S-SYS			AFT		(auto)		C-SYS									
F8	TUNING FREQUANCY (HIGHER PART)																POS 44
F9	TUNING FREQUANCY (LOWER PART)																
FA	S-SYS			AFT		(auto)		C-SYS									
FB	TUNING FREQUANCY (HIGHER PART)																POS 45
FC	TUNING FREQUANCY (LOWER PART)																
FD	S-SYS			AFT		(auto)		C-SYS									
FE																	POS 46
FF																	
100																	
101	TUNING FREQUANCY (HIGHER PART)																POS 47
102	TUNING FREQUANCY (LOWER PART)																
103	S-SYS			AFT		(auto)		C-SYS									
104	TUNING FREQUANCY (HIGHER PART)																POS 48
105	TUNING FREQUANCY (LOWER PART)																
106	S-SYS			AFT		(auto)		C-SYS									
107	TUNING FREQUANCY (HIGHER PART)																POS 49
MODEL									MODEL								
LETTER NO.									LETTER NO.								

MEMORY MAP (Continued)

MODEL :	TV MICOM ENGINEERING		TV DESIGN ENGINEERING		TV PRODUCTION ENGINEERING	
	ISSUED DATE :		ISSUED DATE :		ISSUED DATE :	
PROCESS	MANAGER		MANAGER		MANAGER	
EEPROM CHECK DATA LIST 4	CHIEF		CHIEF		CHIEF	
	ENGINEER		ENGINEER		ENGINEER	

SLAVE ADDRESS : A0 (00~FF) A2 (100~1FF)

ADDRESS	DATA								MICON	EEPROM	S-SYS	CHASSIS		CTV FINAL		LAST INITIAL	POS 0
(HEX)	D7	D6	D5	D4	D3	D2	D1	D0	DEFAULT	RANGE	WRITE(CPU)	CHECK DATA	CHECK TYPE	CHECK DATA	CHECK TYPE	SETTING DATA	REMARK
108	TUNING FREQUANCY (LOWER PART)																
109	S-SYS			AFT		(auto)		C-SYS									
10A	TUNING FREQUANCY (HIGHER PART)																POS 50
10B	TUNING FREQUANCY (LOWER PART)																
10C	S-SYS			AFT		(auto)		C-SYS									
10D	TUNING FREQUANCY (HIGHER PART)																POS 51
10E	TUNING FREQUANCY (LOWER PART)																
10F	S-SYS			AFT		(auto)		C-SYS									
110	TUNING FREQUANCY (HIGHER PART)																POS 52
111	TUNING FREQUANCY (LOWER PART)																
112	S-SYS			AFT		(auto)		C-SYS									
113	TUNING FREQUANCY (HIGHER PART)																POS 53
114	TUNING FREQUANCY (LOWER PART)																
115	S-SYS			AFT		(auto)		C-SYS									
116	TUNING FREQUANCY (HIGHER PART)																POS 54
117	TUNING FREQUANCY (LOWER PART)																
118	S-SYS			AFT		(auto)		C-SYS									
119	TUNING FREQUANCY (HIGHER PART)																POS 55
11A	TUNING FREQUANCY (LOWER PART)																
11B	S-SYS			AFT		(auto)		C-SYS									
11C	TUNING FREQUANCY (HIGHER PART)																POS 56
11D	TUNING FREQUANCY (LOWER PART)																
11E	S-SYS			AFT		(auto)		C-SYS									
11F	TUNING FREQUANCY (HIGHER PART)																POS 57
120	TUNING FREQUANCY (LOWER PART)																
121	S-SYS			AFT		(auto)		C-SYS									
122	TUNING FREQUANCY (HIGHER PART)																POS 58
123	TUNING FREQUANCY (LOWER PART)																
124	S-SYS			AFT		(auto)		C-SYS									
125	TUNING FREQUANCY (HIGHER PART)																POS 59
126	TUNING FREQUANCY (LOWER PART)																
127	S-SYS			AFT		(auto)		C-SYS									
128	TUNING FREQUANCY (HIGHER PART)																POS 60
129	TUNING FREQUANCY (LOWER PART)																
12A	S-SYS			AFT		(auto)		C-SYS									
12B	TUNING FREQUANCY (HIGHER PART)																POS 61
12C	TUNING FREQUANCY (LOWER PART)																
12D	S-SYS			AFT		(auto)		C-SYS									
12E	TUNING FREQUANCY (HIGHER PART)																POS 62
12F	TUNING FREQUANCY (LOWER PART)																
130	S-SYS			AFT		(auto)		C-SYS									
131	TUNING FREQUANCY (HIGHER PART)																POS 63
132	TUNING FREQUANCY (LOWER PART)																
133	S-SYS			AFT		(auto)		C-SYS									
134	TUNING FREQUANCY (HIGHER PART)																POS 64
135	TUNING FREQUANCY (LOWER PART)																
136	S-SYS			AFT		(auto)		C-SYS									
137	TUNING FREQUANCY (HIGHER PART)																POS 65
138	TUNING FREQUANCY (LOWER PART)																
139	S-SYS			AFT		(auto)		C-SYS									
13A	TUNING FREQUANCY (HIGHER PART)																POS 66
13B	TUNING FREQUANCY (LOWER PART)																
13C	S-SYS			AFT		(auto)		C-SYS									
13D	TUNING FREQUANCY (HIGHER PART)																POS 67
13E	TUNING FREQUANCY (LOWER PART)																
13F	S-SYS			AFT		(auto)		C-SYS									
140	TUNING FREQUANCY (HIGHER PART)																POS 68
141	TUNING FREQUANCY (LOWER PART)																
142	S-SYS			AFT		(auto)		C-SYS									
143	TUNING FREQUANCY (HIGHER PART)																POS 69
144	TUNING FREQUANCY (LOWER PART)																
145	S-SYS			AFT		(auto)		C-SYS									
146	TUNING FREQUANCY (HIGHER PART)																POS 70
147	TUNING FREQUANCY (LOWER PART)																
148	S-SYS			AFT		(auto)		C-SYS									
149	TUNING FREQUANCY (HIGHER PART)																POS 71
14A	TUNING FREQUANCY (LOWER PART)																
14B	S-SYS			AFT		(auto)		C-SYS									
14C	TUNING FREQUANCY (HIGHER PART)																POS 72
14D	TUNING FREQUANCY (LOWER PART)																
14E	S-SYS			AFT		(auto)		C-SYS									
14F	TUNING FREQUANCY (HIGHER PART)																POS 73
150	TUNING FREQUANCY (LOWER PART)																
151	S-SYS			AFT		(auto)		C-SYS									
152	TUNING FREQUANCY (HIGHER PART)																POS 74
153	TUNING FREQUANCY (LOWER PART)																
154	S-SYS			AFT		(auto)		C-SYS									
155	TUNING FREQUANCY (HIGHER PART)																POS 75
156	TUNING FREQUANCY (LOWER PART)																
157	S-SYS			AFT		(auto)		C-SYS									
158	TUNING FREQUANCY (HIGHER PART)																POS 76
159	TUNING FREQUANCY (LOWER PART)																
15A	S-SYS			AFT		(auto)		C-SYS									
15B	TUNING FREQUANCY (HIGHER PART)																POS 77
15C	TUNING FREQUANCY (LOWER PART)																
15D	S-SYS			AFT		(auto)		C-SYS									
15E	TUNING FREQUANCY (HIGHER PART)																POS 78
15F	TUNING FREQUANCY (LOWER PART)																
MODEL									MODEL								
LETTER NO.									LETTER NO.								

MEMORY MAP (Continued)

MODEL :	TV MICOM ENGINEERING		TV DESIGN ENGINEERING		TV PRODUCTION ENGINEERING	
	ISSUED DATE :		ISSUED DATE :		ISSUED DATE :	
PROCESS	MANAGER		MANAGER		MANAGER	
EEPROM CHECK DATA LIST 5	CHIEF		CHIEF		CHIEF	
	ENGINEER		ENGINEER		ENGINEER	

SLAVE ADDRESS : A0 (00~FF) A2 (100~1FF)

ADDRESS	DATA								MICON	EEPROM	S-SYS	CHASSIS		CTV FINAL		LAST INITIAL	POS 0
(HEX)	D7	D6	D5	D4	D3	D2	D1	D0	DEFAULT	RANGE	WRITE(CPU)	CHECK DATA	CHECK TYPE	CHECK DATA	CHECK TYPE	SETTING DATA	REMARK
160		S-SYS		AFT		(auto)		C-SYS									
161					TUNING FREQUANCY (HIGHER PART)												POS 79
162					TUNING FREQUANCY (LOWER PART)												
163		S-SYS		AFT		(auto)		C-SYS									
164					TUNING FREQUANCY (HIGHER PART)												POS 80
165					TUNING FREQUANCY (LOWER PART)												
166		S-SYS		AFT		(auto)		C-SYS									
167					TUNING FREQUANCY (HIGHER PART)												POS 81
168					TUNING FREQUANCY (LOWER PART)												
169		S-SYS		AFT		(auto)		C-SYS									
16A					TUNING FREQUANCY (HIGHER PART)												POS 82
16B					TUNING FREQUANCY (LOWER PART)												
16C		S-SYS		AFT		(auto)		C-SYS									
16D					TUNING FREQUANCY (HIGHER PART)												POS 83
16E					TUNING FREQUANCY (LOWER PART)												
16F		S-SYS		AFT		(auto)		C-SYS									
170					TUNING FREQUANCY (HIGHER PART)												POS 84
171					TUNING FREQUANCY (LOWER PART)												
172		S-SYS		AFT		(auto)		C-SYS									
173					TUNING FREQUANCY (HIGHER PART)												POS 85
174					TUNING FREQUANCY (LOWER PART)												
175		S-SYS		AFT		(auto)		C-SYS									
176					TUNING FREQUANCY (HIGHER PART)												POS 86
177					TUNING FREQUANCY (LOWER PART)												
178		S-SYS		AFT		(auto)		C-SYS									
179					TUNING FREQUANCY (HIGHER PART)												POS 87
17A					TUNING FREQUANCY (LOWER PART)												
17B		S-SYS		AFT		(auto)		C-SYS									
17C					TUNING FREQUANCY (HIGHER PART)												POS 88
17D					TUNING FREQUANCY (LOWER PART)												
17E		S-SYS		AFT		(auto)		C-SYS									
17F																	POS 89
180																	
181																	
182					TUNING FREQUANCY (HIGHER PART)												POS 90
183					TUNING FREQUANCY (LOWER PART)												
184		S-SYS		AFT		(auto)		C-SYS									
185					TUNING FREQUANCY (HIGHER PART)												POS 91
186					TUNING FREQUANCY (LOWER PART)												
187		S-SYS		AFT		(auto)		C-SYS									
188					TUNING FREQUANCY (HIGHER PART)												POS 92
189					TUNING FREQUANCY (LOWER PART)												
18A		S-SYS		AFT		(auto)		C-SYS									
18B					TUNING FREQUANCY (HIGHER PART)												POS 93
18C					TUNING FREQUANCY (LOWER PART)												
18D		S-SYS		AFT		(auto)		C-SYS									
18E					TUNING FREQUANCY (HIGHER PART)												POS 94
18F					TUNING FREQUANCY (LOWER PART)												
190		S-SYS		AFT		(auto)		C-SYS									
191					TUNING FREQUANCY (HIGHER PART)												POS 95
192					TUNING FREQUANCY (LOWER PART)												
193		S-SYS		AFT		(auto)		C-SYS									
194					TUNING FREQUANCY (HIGHER PART)												POS 96
195					TUNING FREQUANCY (LOWER PART)												
196		S-SYS		AFT		(auto)		C-SYS									
197					TUNING FREQUANCY (HIGHER PART)												POS 97
198					TUNING FREQUANCY (LOWER PART)												
199		S-SYS		AFT		(auto)		C-SYS									
19A					TUNING FREQUANCY (HIGHER PART)												POS 98
19B					TUNING FREQUANCY (LOWER PART)												
19C		S-SYS		AFT		(auto)		C-SYS									
19D					TUNING FREQUANCY (HIGHER PART)												POS 99
19E					TUNING FREQUANCY (LOWER PART)												
19F		S-SYS		AFT		(auto)		C-SYS									
1A0																	AV1
1A1																	
1A2						(auto)		C-SYS									
1A3																	AV2
1A4																	
1A5						(auto)		C-SYS									
1A6																	
1A7																	
1A8																	
1A9																	
1AA																	
1AB																	
1AC																	
1AD																	
1AE																	
1AF																	
1B0																	
1B1																	
1B2																	
1B3																	
1B4																	
1B5																	
1B6																	
1B7																	
MODEL									MODEL								
LETTER NO.									LETTER NO.								

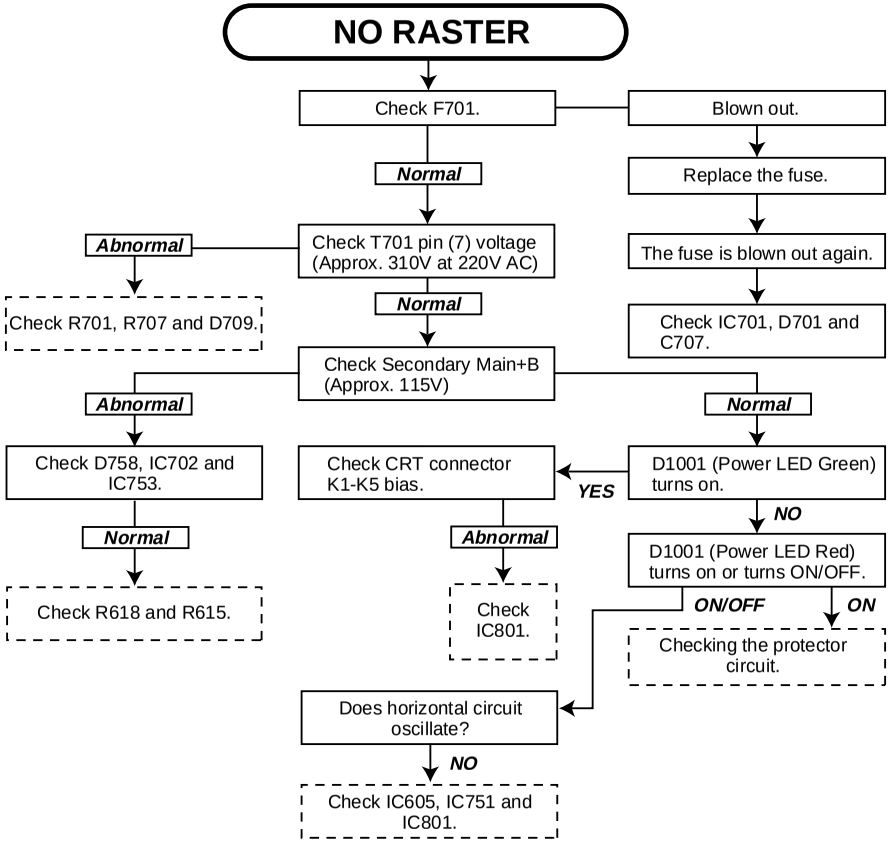
MEMORY MAP (Continued)

MODEL :	TV MICOM ENGINEERING		TV DESIGN ENGINEERING		TV PRODUCTION ENGINEERING	
	ISSUED DATE :		ISSUED DATE :		ISSUED DATE :	
PROCESS	MANAGER		MANAGER		MANAGER	
EEPROM CHECK DATA LIST 6	CHIEF		CHIEF		CHIEF	
	ENGINEER		ENGINEER		ENGINEER	

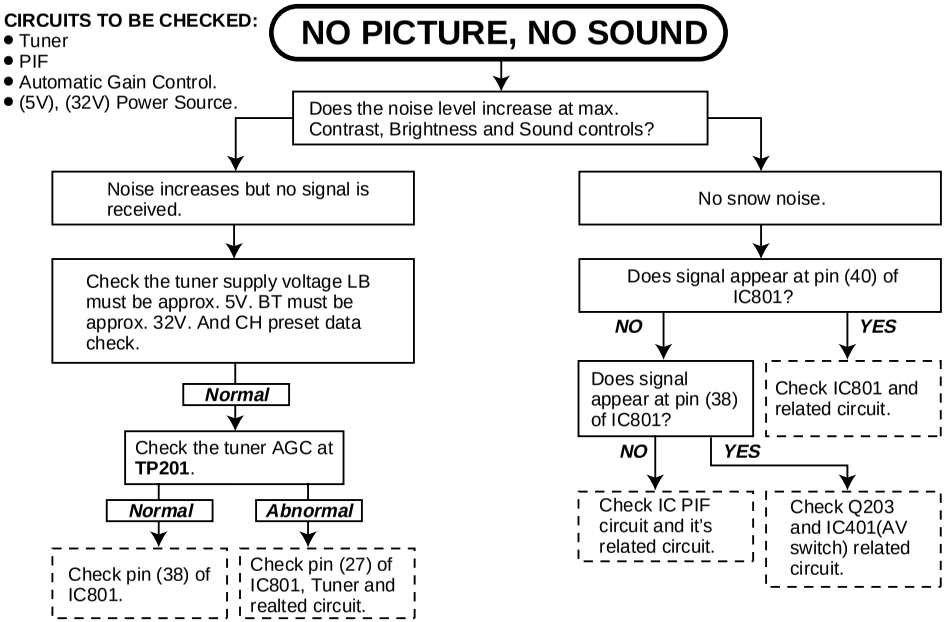
SLAVE ADDRESS : A0 (00~FF) A2 (100~1FF)

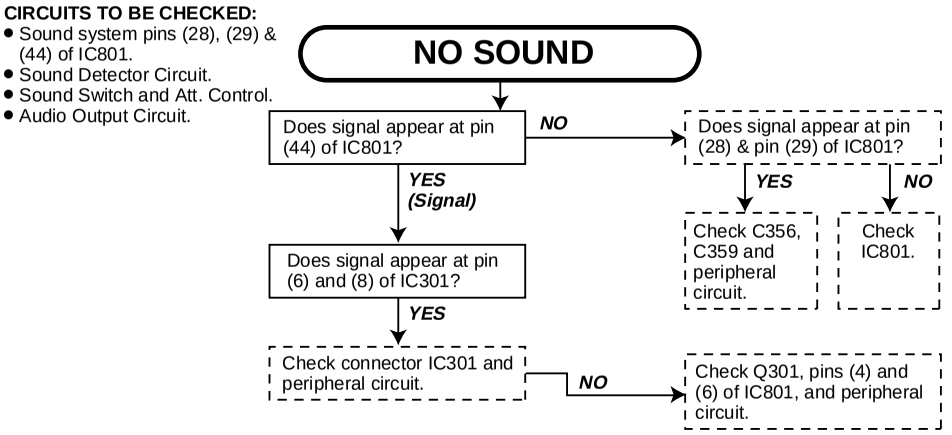
ADDRESS	DATA								MICON	EEPROM	S-SYS	CHASSIS		CTV FINAL		LAST INITIAL	POS 0
(HEX)	D7	D6	D5	D4	D3	D2	D1	D0	DEFAULT	RANGE	WRITE(CPU)	CHECK DATA	CHECK TYPE	CHECK DATA	CHECK TYPE	SETTING DATA	REMARK
1B8																	
1B9																	
1BA																	
1BB																	
1BC																	
1BD																	
1BE																	
1BF																	
1C0																	
1C1																	
1C2																	
1C3																	
1C4																	
1C5																	
1C6																	
1C7																	
1C8																	
1C9																	
1CA																	
1CB																	
1CC																	
1CD																	
1CE																	
1CF																	
1D0																	
1D1																	
1D2																	
1D3																	
1D4																	
1D5																	
1D6																	
1D7																	
1D8																	
1D9																	
1DA																	
1DB																	
1DC																	
1DD																	
1DE																	
1DF																	
1E0																	
1E1																	
1E2																	
1E3																	
1E4																	
1E5																	
1E6																	
1E7																	
1E8																	
1E9																	
1EA																	
1EB																	
1EC																	
1ED																	
1EE																	
1EF																	
1F0																	
1F1																	
1F2																	
1F3																	
1F4																	
1F5																	
1F6																	
1F7																	
1F8																	
1F9																	
1FA																	
1FB																	
1FC																	
1FD																	
1FE																	
1FF																	
MODEL									MODEL								
LETTER NO.									LETTER NO.								

TROUBLE SHOOTING TABLE



TROUBLE SHOOTING TABLE (Continued)


CIRCUITS TO BE CHECKED:
• Tuner
• PIF
• Automatic Gain Control.
• (5V), (32V) Power Source.
NO PICTURE, NO SOUND
Does the noise level increase at max. Contrast, Brightness and Sound controls?
Noise increases but no signal is received.
No snow noise.
Check the tuner supply voltage LB must be approx. 5V. BT must be approx. 32V. And CH preset data check.
Does signal appear at pin (40) of IC801?
NO
YES
Normal
Does signal appear at pin (38) of IC801?
Check IC801 and related circuit.
Check the tuner AGC at TP201.
NO
YES
Normal
Abnormal
Check IC PIF circuit and it's related circuit.
Check Q203 and IC401(AV switch) related circuit.
Check pin (38) of IC801.
Check pin (27) of IC801, Tuner and realted circuit.


CIRCUITS TO BE CHECKED:
• Sound system pins (28), (29) & (44) of IC801.
• Sound Detector Circuit.
• Sound Switch and Att. Control.
• Audio Output Circuit.
NO SOUND
Does signal appear at pin (44) of IC801?
NO
Does signal appear at pin (28) & pin (29) of IC801?
YES (Signal)
YES
NO
Check C356, C359 and peripheral circuit.
Check IC801.
Does signal appear at pin (6) and (8) of IC301?
YES
Check connector IC301 and peripheral circuit.
NO
Check Q301, pins (4) and (6) of IC801, and peripheral circuit.

TROUBLE SHOOTING TABLE (Continued)

NEITHER VERTICAL NOR HORIZONTAL SYNCHRONIZATION

CIRCUIT TO BE CHECKED:
- Sync. Separator Circuit.

Check pins (33) & (34) of IC801.

DEFECTIVE VERTICAL AMP. AND VERTICAL LINEARITY

Re-adjust Vertical Size. (Bas Data)

Vertical Linearity and Size are abnormal.

Check R503, R506, R513, C517 and D501.

NO VERTICAL SCAN

Check IC501.

- ***Normal*** → Check C503 amd C507.
- ***Abnormal*** → Check IC501.

TROUBLE SHOOTING TABLE (Continued)

NO SPECIFIC COLOUR

Is some colour produced in B/W broadcast reception?

- ***NO*** → Check IC801, R801, R802, R803, D804, D805, D806, Q801.
- ***YES*** → Is the white balance properly adjusted?
  - ***NO*** → Re-adjust the white balance.
  - ***YES*** →
    - The picture colour is cyan. → Check Q871, Q883 and its adjacent circuits.
    - The picture colour is magenta. → Check Q870, Q885 and its adjacent circuits.
    - The picture colour is yellow. → Check Q872, Q887 and its adjacent circuits.

NO SPECIFICATION COLOUR "PAL/SECAM" (NO COLOUR SYNCHRONIZATION)

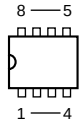
Check IC801 and Bias control circuit.

Normal

Check X1001 (12MHz).

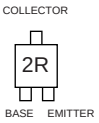
SOLID STATE DEVICE BASE DIAGRAM

TOP VIEW

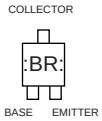


M24C04W

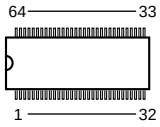
FX0008GE



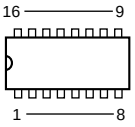
D601A



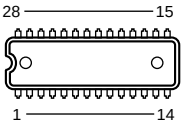
B709AR



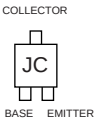
ix3311CEN1/
ix3368CEN0



TDA9821

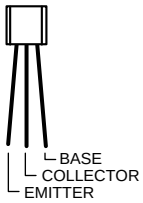


M52797SP

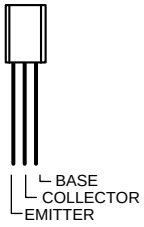


2SC2735

SIDE VIEW

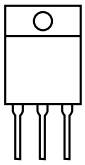


2SA1015
2SC1815

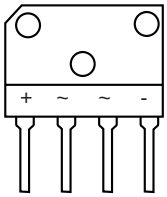


2SC2482

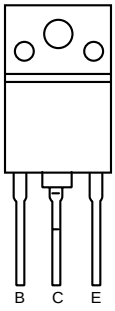
PST573J



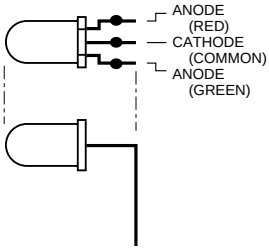
SE115N



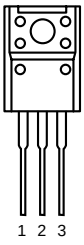
DX0386CE



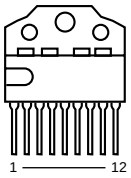
2SD2586



PX0423CE



KA7808
KA7805



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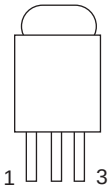
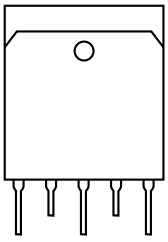
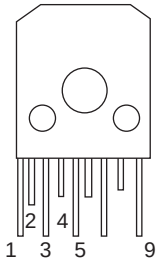


TA48M033

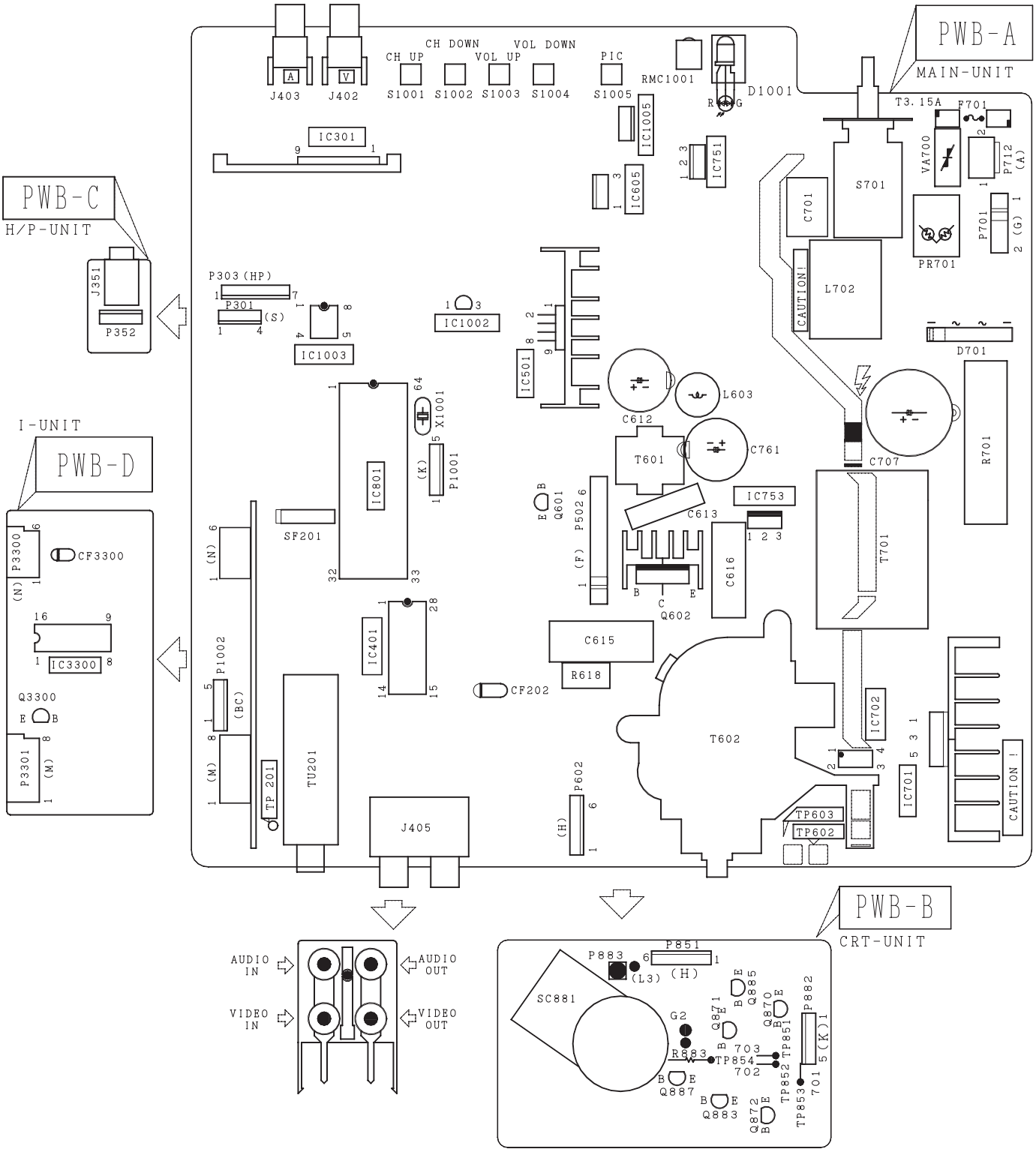


STRF6654



TDA8357

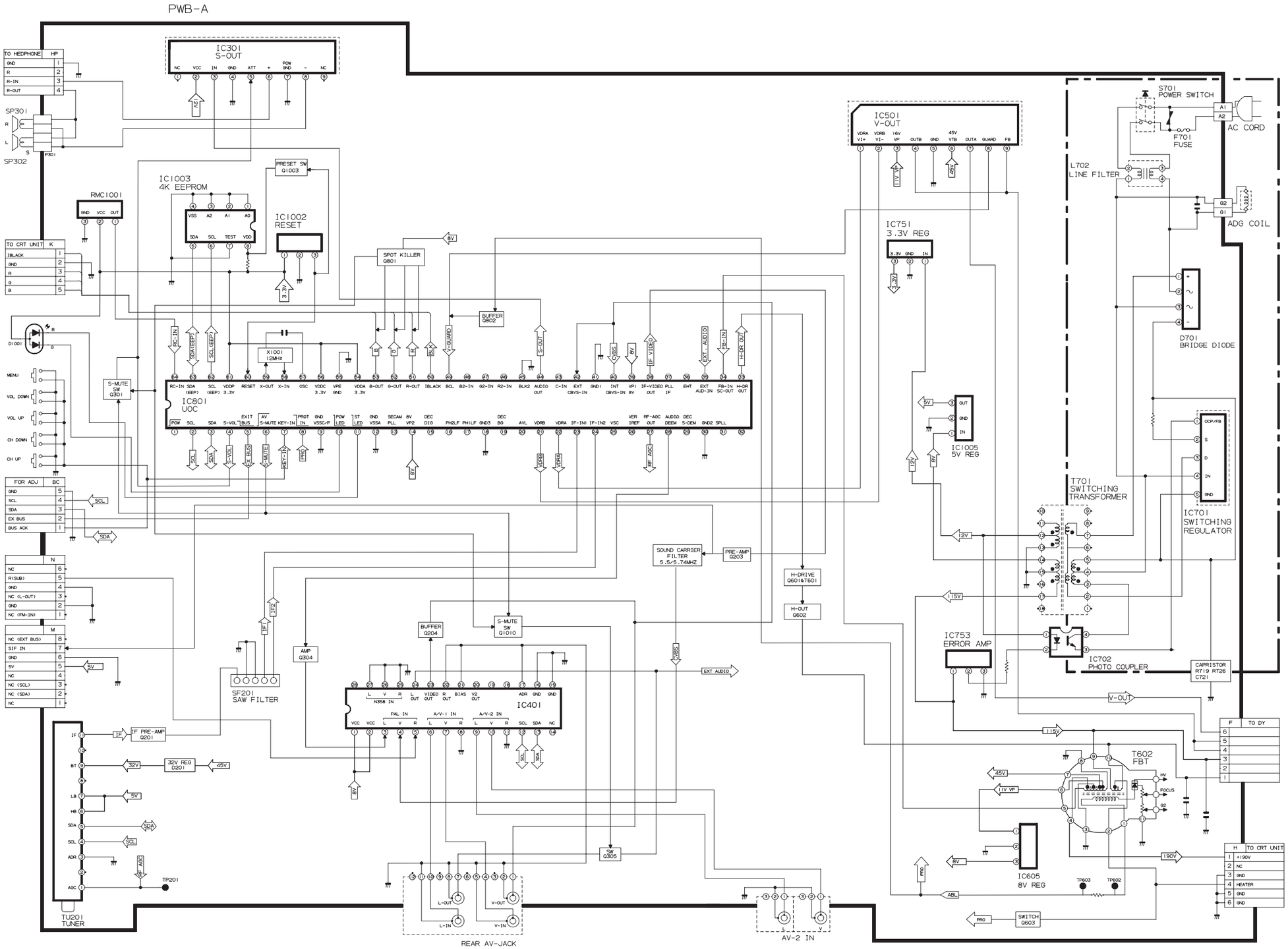
CHASSIS LAYOUT



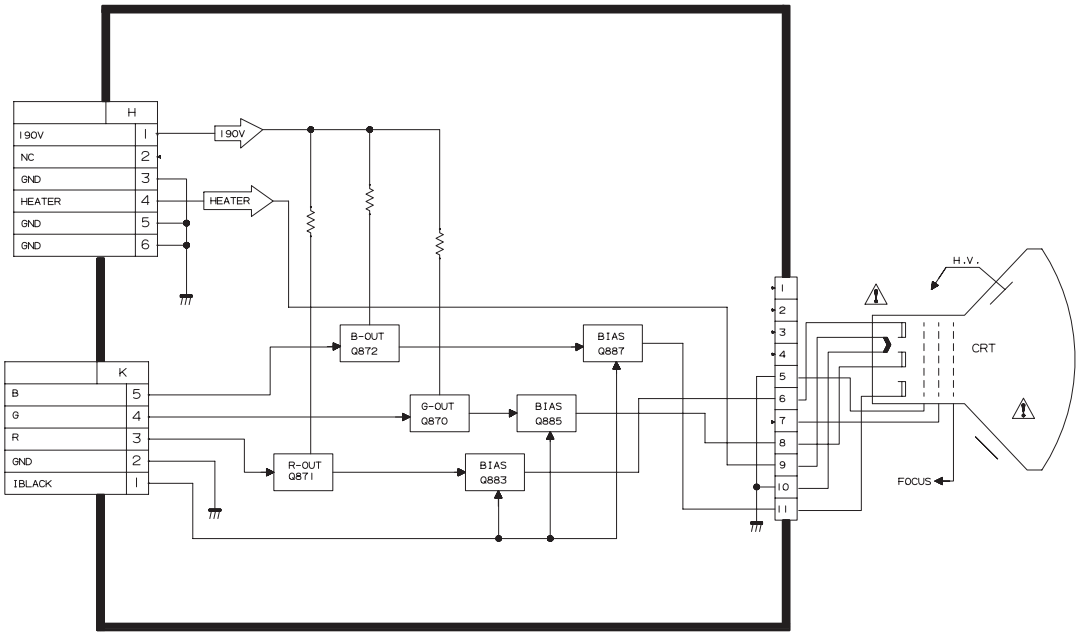
20GT-20
21GT-20

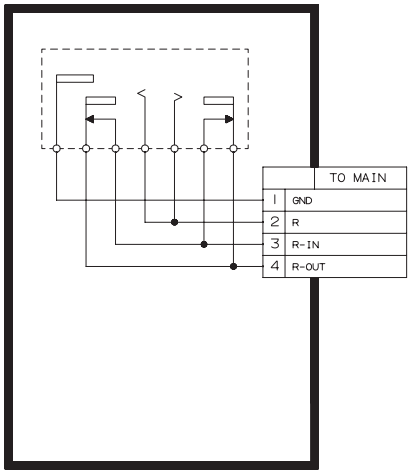
BLOCK DIAGRAM

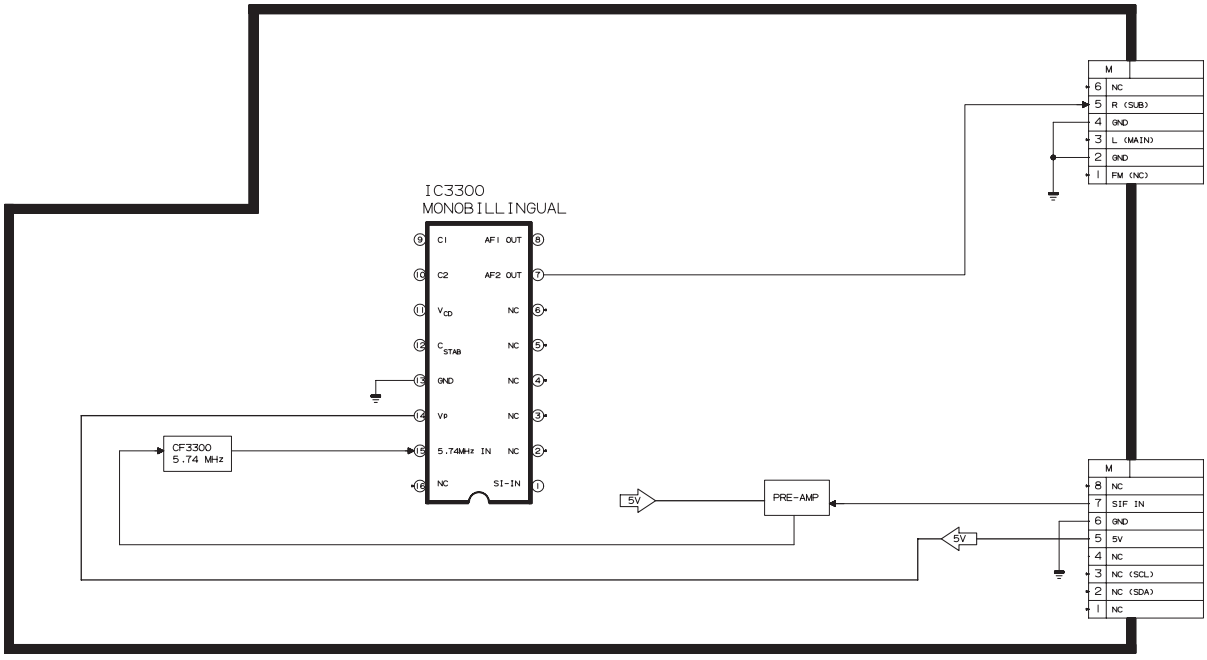
MAIN UNIT BLOCK DIAGRAM



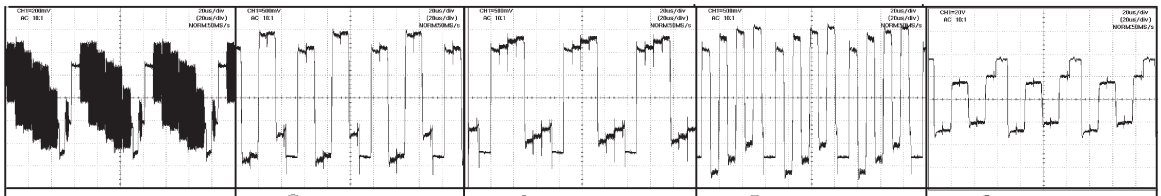
CRT/MONO HEADPHONE/MONOBILLINGUAL BLOCK DIAGRAM



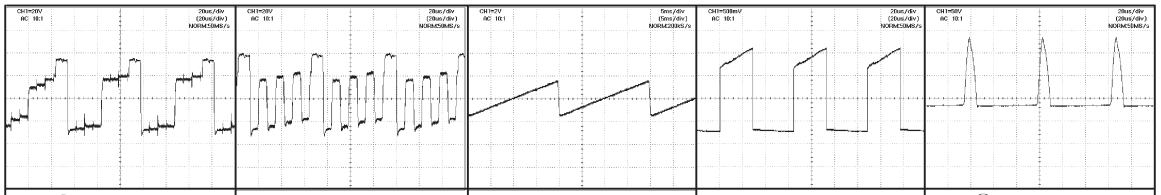




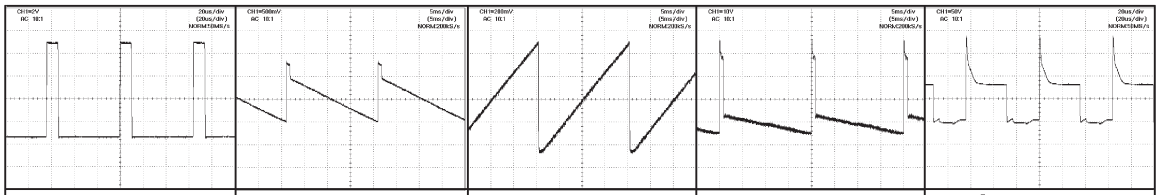
WAVEFORMS



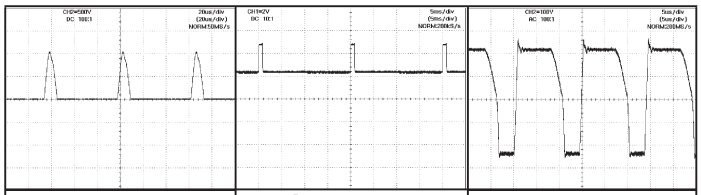
① 0.98Vp-p 20" 1.12Vp-p 21"	② 3.15Vp-p 20" 3.17Vp-p 21"	③ 3.02Vp-p 20" 3.11Vp-p 21"	④ 3.28Vp-p 20" 3.11Vp-p 21"	⑤ 81.8Vp-p 20" 83.8Vp-p 21"



⑥ 80.0Vp-p 20" 80.0Vp-p 21"	⑦ 89.4Vp-p 20" 87.2Vp-p 21"	⑧ 3.10Vp-p 20" 3.11Vp-p 21"	⑨ 1.85Vp-p 20" 1.93Vp-p 21"	⑩ 129.0Vp-p 20" 133.0Vp-p 21"



⑪ 8.38Vp-p 20" 8.48Vp-p 21"	⑫ 1.08Vp-p 20" 1.17Vp-p 21"	⑬ 0.83Vp-p 20" 0.91Vp-p 21"	⑭ 46.6Vp-p 20" 48.0Vp-p 21"	⑮ 130.0Vp-p 20" 130.5Vp-p 21"



⑯ 952Vp-p 20" 980Vp-p 21"	⑰ 2.7Vp-p 20" 2.6Vp-p 21"	⑱ 504Vp-p 20" 510Vp-p 21"

DESCRIPTION OF SCHEMATIC DIAGRAM

SAFETY NOTES:

1. *DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.*
2. *SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.*

IMPORTANT SAFETY NOTICE:

PARTS MARKED WITH "⚠" ( ) ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET. BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFORMANCE OF THE SET.

SERVICE PRECAUTION:

THE AREA ENCLOSED BY THIS LINE (▬ ▬ ▬) IS DIRECTLY CONNECTED WITH AC MAINS VOLTAGE.
WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANSFORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAZARD OF ELECTRIC SHOCK.

NOTES:

1. *The unit of resistance "ohm" is omitted. (K = 1000 ohms, M = Meg ohm).*
2. *All resistors are 1/16 watt, unless otherwise noted.*
3. *All capacitors are μF, unless otherwise noted. (P = μμF).*

VOLTAGE MEASUREMENT CONDITIONS:

1. *Voltage in parenthesis measured with no Signal.*
2. *Voltages without parenthesis measured with PAL Colour-Signal.*
3. *All the voltages in each point are measured high impedance voltmeter.*

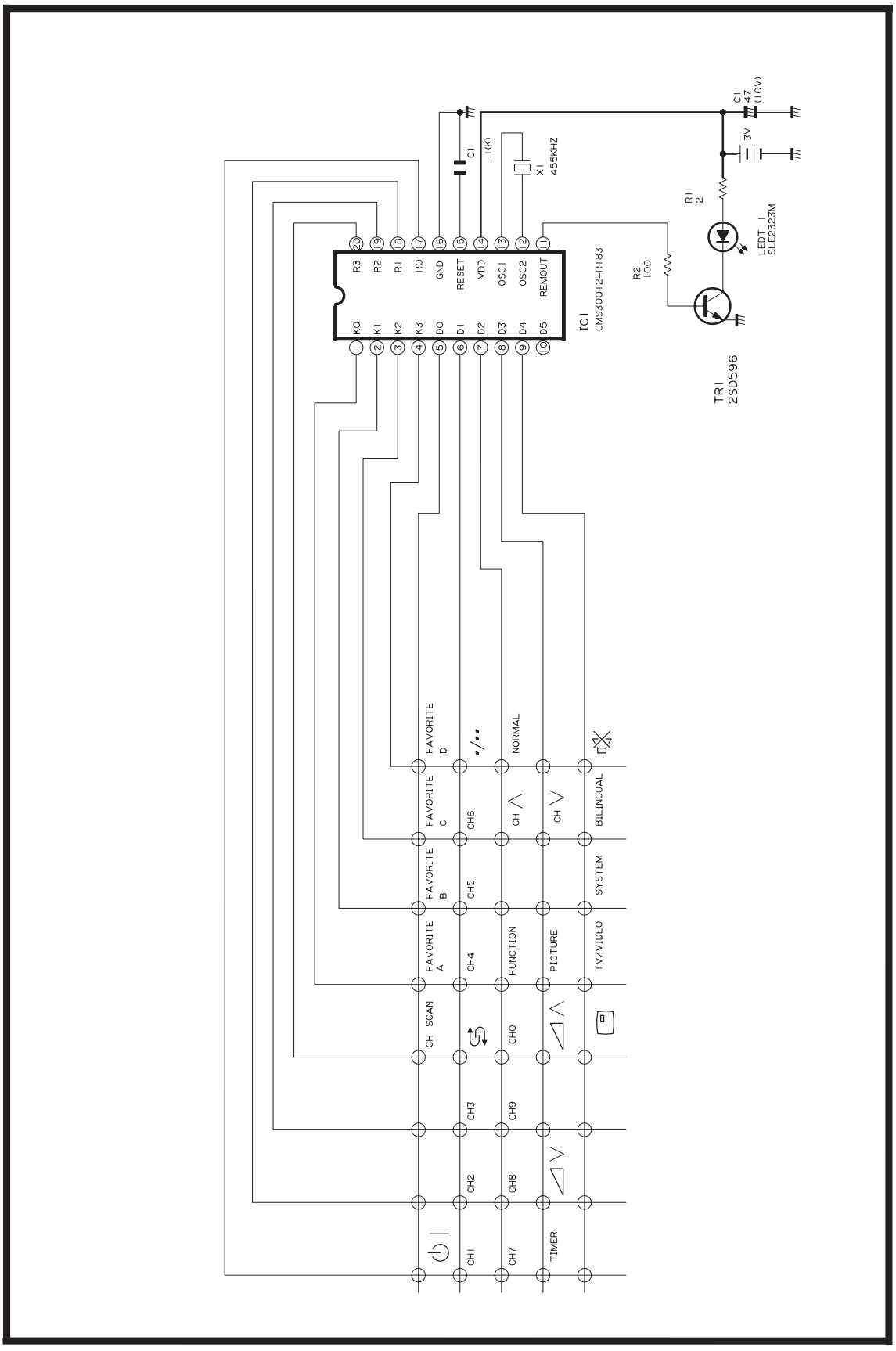
WAVEFORM MEASUREMENT CONDITIONS:

1. *Colour bar generator signal of 1.8V peak to peak applied at Base of Video Buffer Amp. Q200.*
2. *Approximately 4.0 V AGC bias.*

SCHEMATIC DIAGRAM

Infrared Remote Control Unit

NOTE: The parts here shown are supplied as an assembly but not independently.



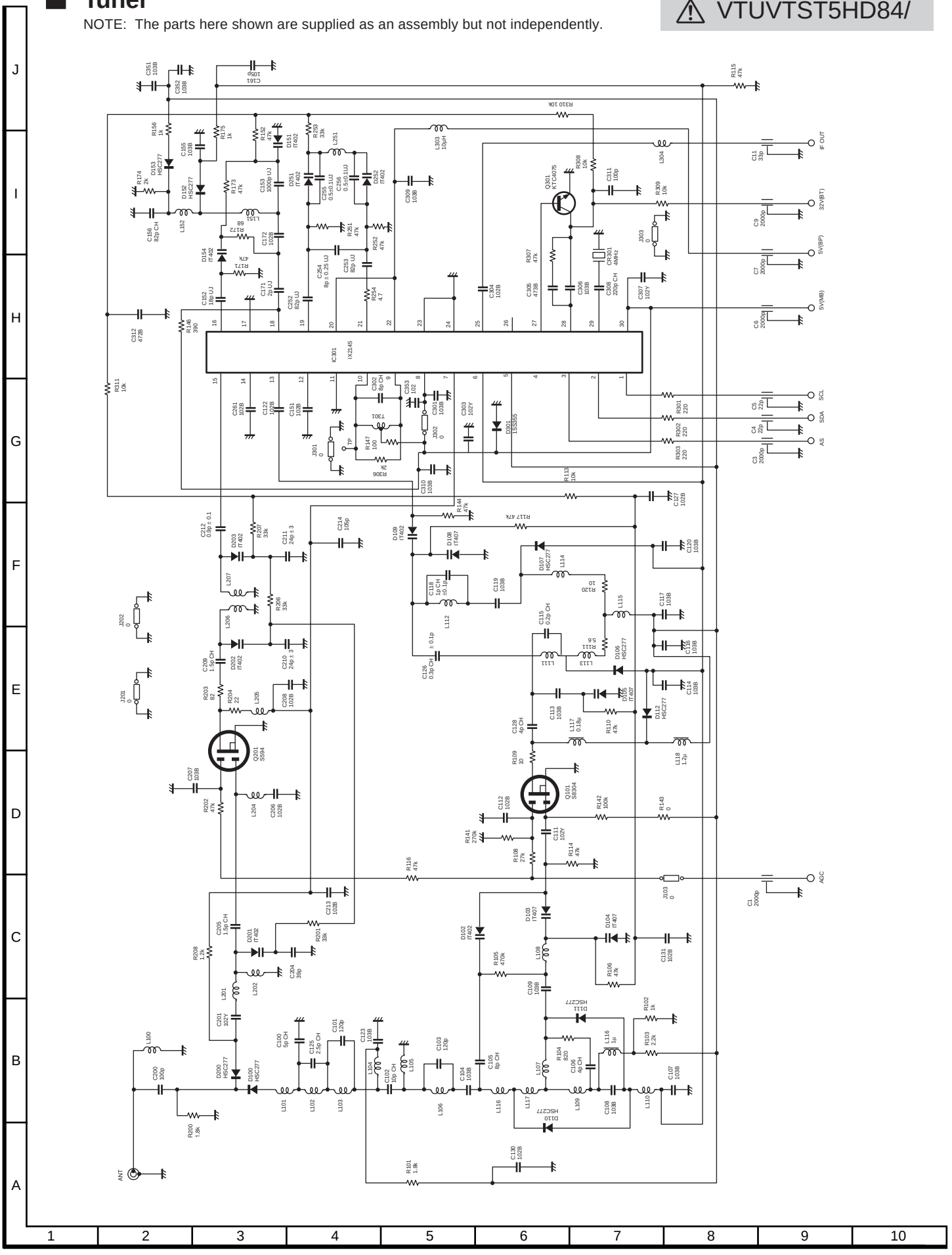
Notes

Unless specified, the resistors are 1/10W ± 5%.

Tuner

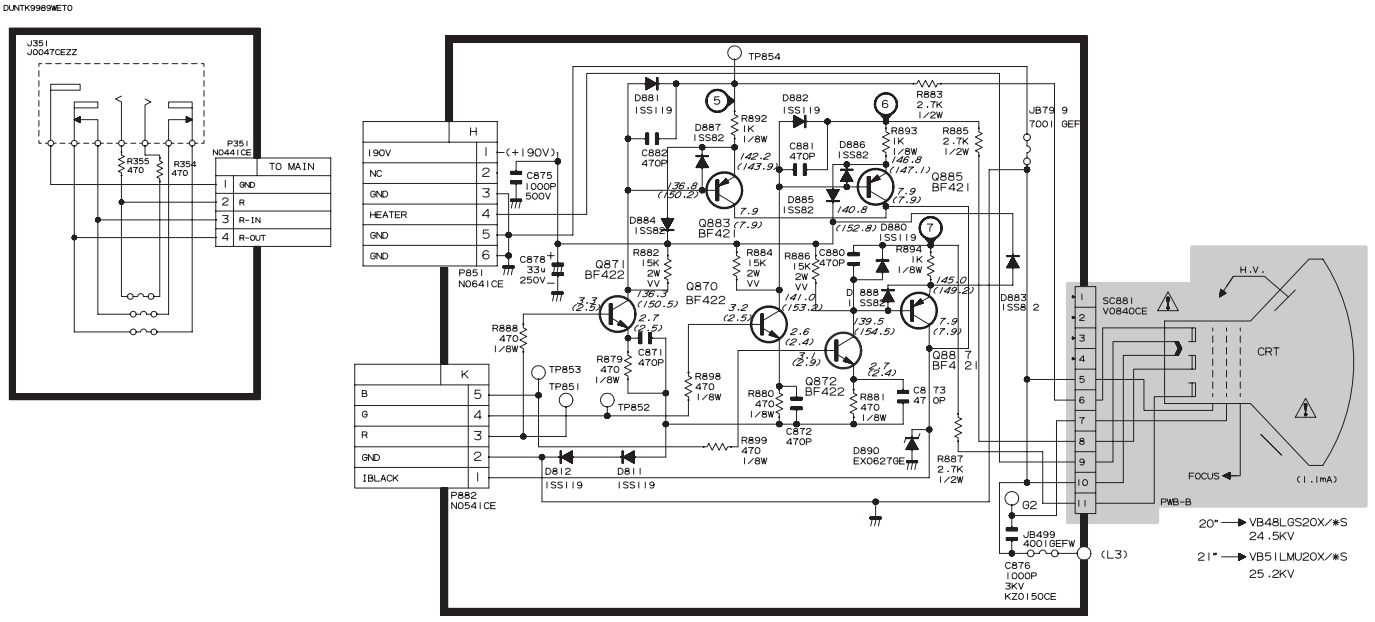
NOTE: The parts here shown are supplied as an assembly but not independently.

⚠ VTUVTST5HD84/

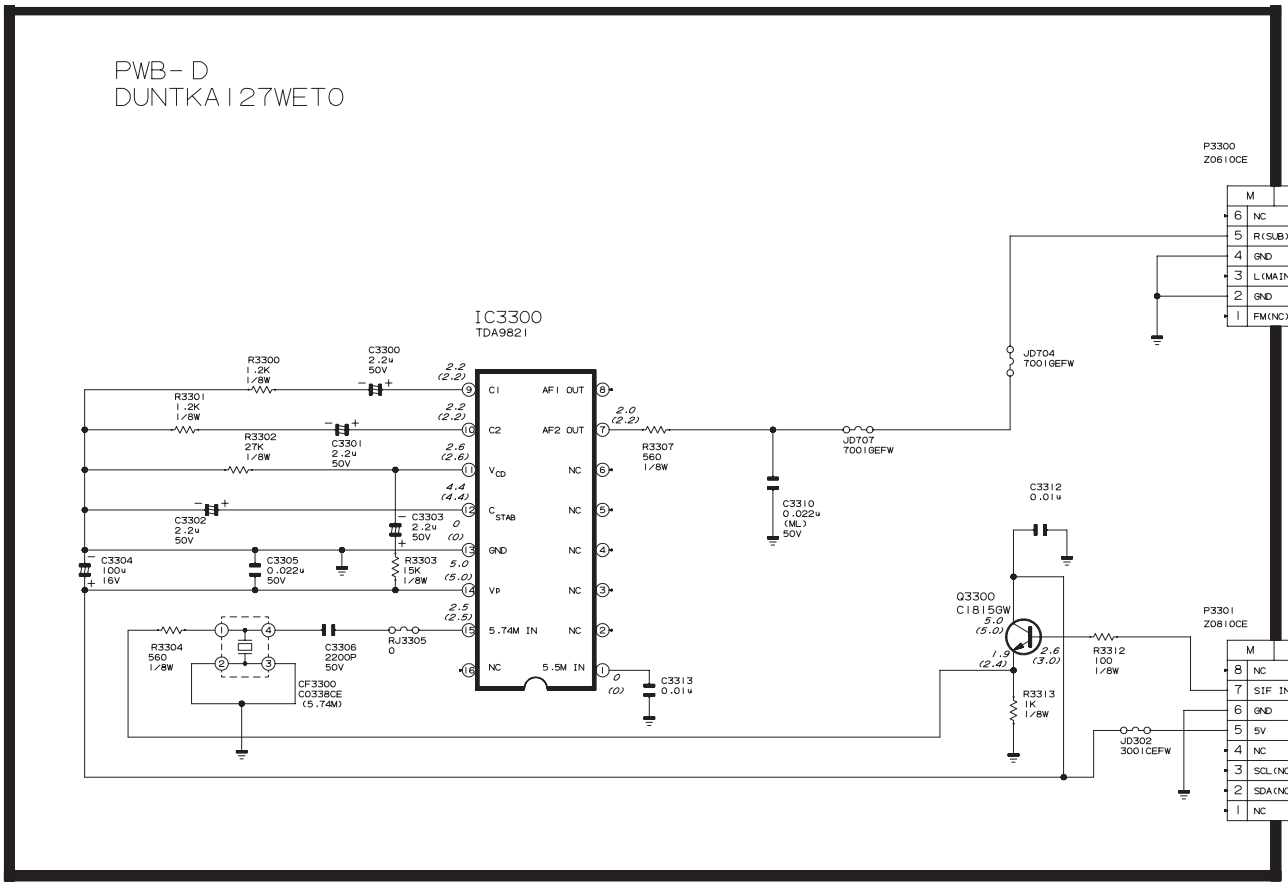


CRT/MONO HEADPHONE/MONO BILLINGUAL UNIT

NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=MEGAOHM).
2.ALL RESISTORS ARE 1/16WATT.UNLESS OTHERWISE NOTED.
3.ALL CAPACITORS ARE uF.UNLESS OTHERWISE NOTED(P=uuF).

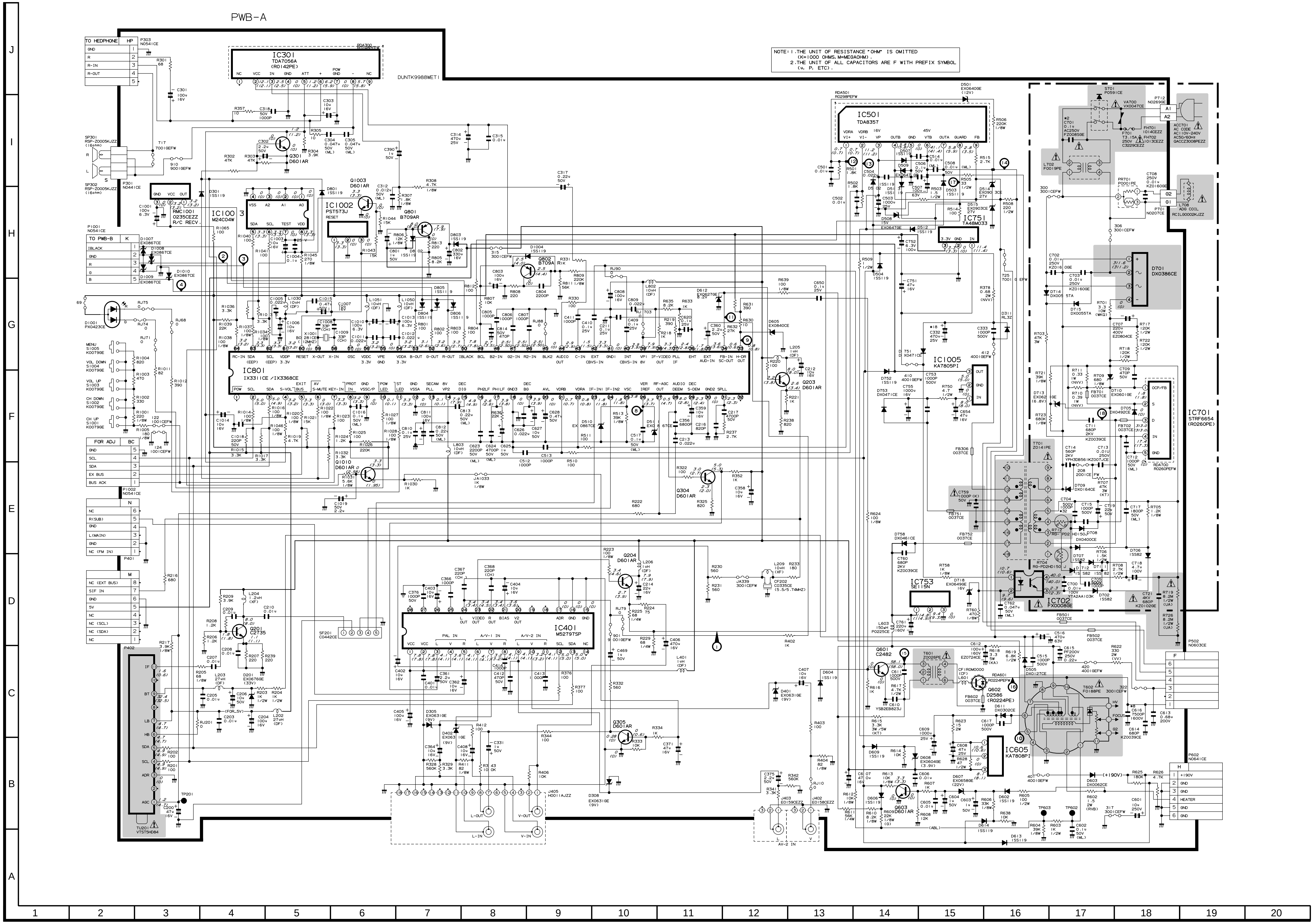


NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=MEGAOHM).
2.ALL RESISTORS ARE 1/16WATT.UNLESS OTHERWISE NOTED.
3.ALL CAPACITORS ARE uF.UNLESS OTHERWISE NOTED(P=uuF).



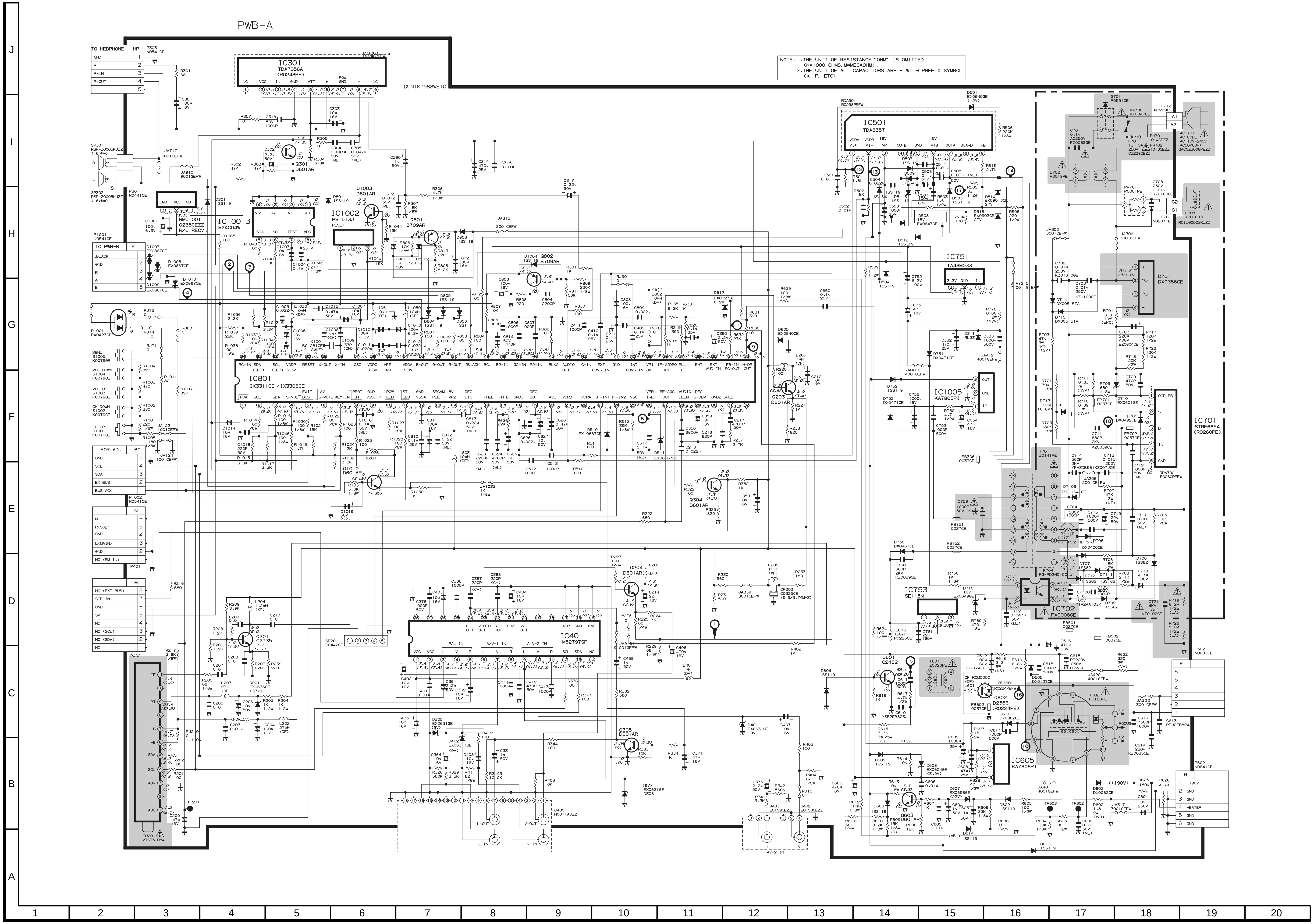
20GT-20
21GT-20

MAIN UNIT(20GT-20)


PWB-A
NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=MEGAOHM).
2.THE UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL
(u, P, ETC).
DUNTK9988WET1
IC301 TDA7056A (R0142PE)
IC1003 M24C04W
IC1002 PST573J
RMC1001 0235CEZZ R/C RECV.
IC801 IX3311CE / IX3368CE
IC401 M52797SP
IC501 TDA8357
IC751 TA48M033
IC1005 KA7805PI
IC701 STRF6654 (R0260PE)
IC702 FX0008GE
IC753 SE115N
IC605 KA7808PI
D701 DX0386CE
T701 Z0141PE
T601 Z0026PE
T602 F0188PE
TU201 VTST5HD84
TO HEDPHONE
TO PWB-B
FOR ADJ
ACC701 AC CODE AC110V-240V AC50/60Hz QACCZ3008PEZZ
L708 ADG COIL RCILG0002KJZZ
AV-2 IN
L-OUT
V-OUT
L-IN
V-IN
HV
FOCUS
G2
+190V
GND
HEATER
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
B
C
D
E
F
G
H
I
J

20GT-20
21GT-20

MAIN UNIT(21GT-20)


PWB-A
NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=MEGAOHM).
2.THE UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL
(u, P, ETC).
DUNTK9988WET0
IC301
TDA7056A
(R0248PE)
IC501
TDA8357
IC751
TA48M033
IC801
IX3311CE /IX3368CE
IC1002
PST573J
IC1003
M24C04W
IC1005
KA7805PI
IC401
M5279TSP
IC753
SE115N
IC605
KA7808PI
IC701
STRF6654
(R0260PE)
IC702
FX0008GE
D701
DX0386CE
T701
Z0141PE
T601
Z0026PE
T602
F0188PE
TU201
VTST5HD84
TO HEDPHONE
TO PWB-B
FOR ADJ
P303
N0541CE
P1001
N0541CE
P1002
N0541CE
P401
P402
P502
N0603CE
P602
N0641CE
P712
N0269GE
P701
N0207CE
ACC701
AC CODE
AC110V-240V
AC50/60Hz
QACCZ3008PEZZ
L708
ADG COIL
RCILG0003KJZZ
J405
H0011AJZZ
AV-2 IN
L-OUT
V-OUT
L-IN
V-IN
J
I
H
G
F
E
D
C
B
A
1
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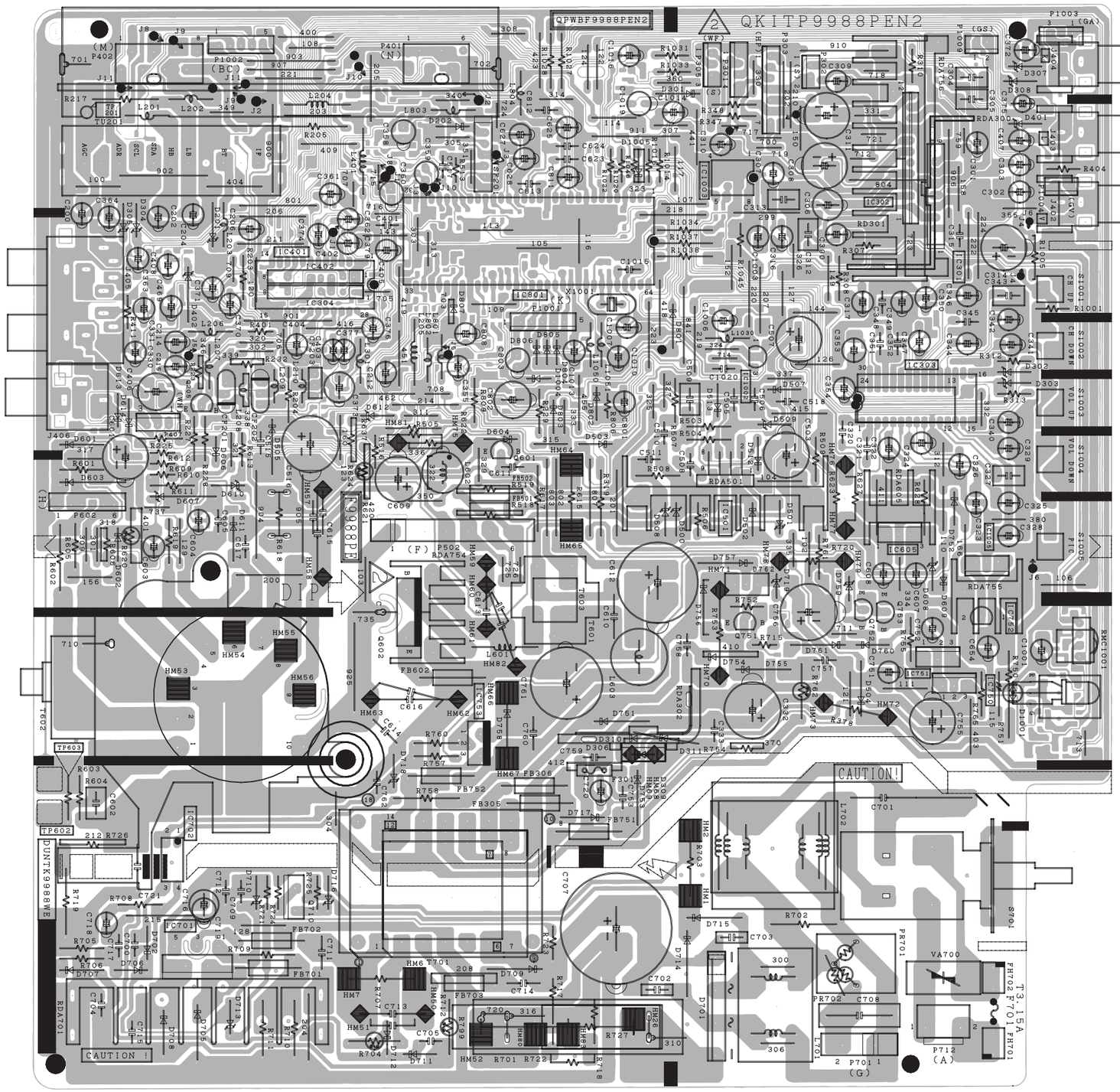
20GT-20
21GT-20

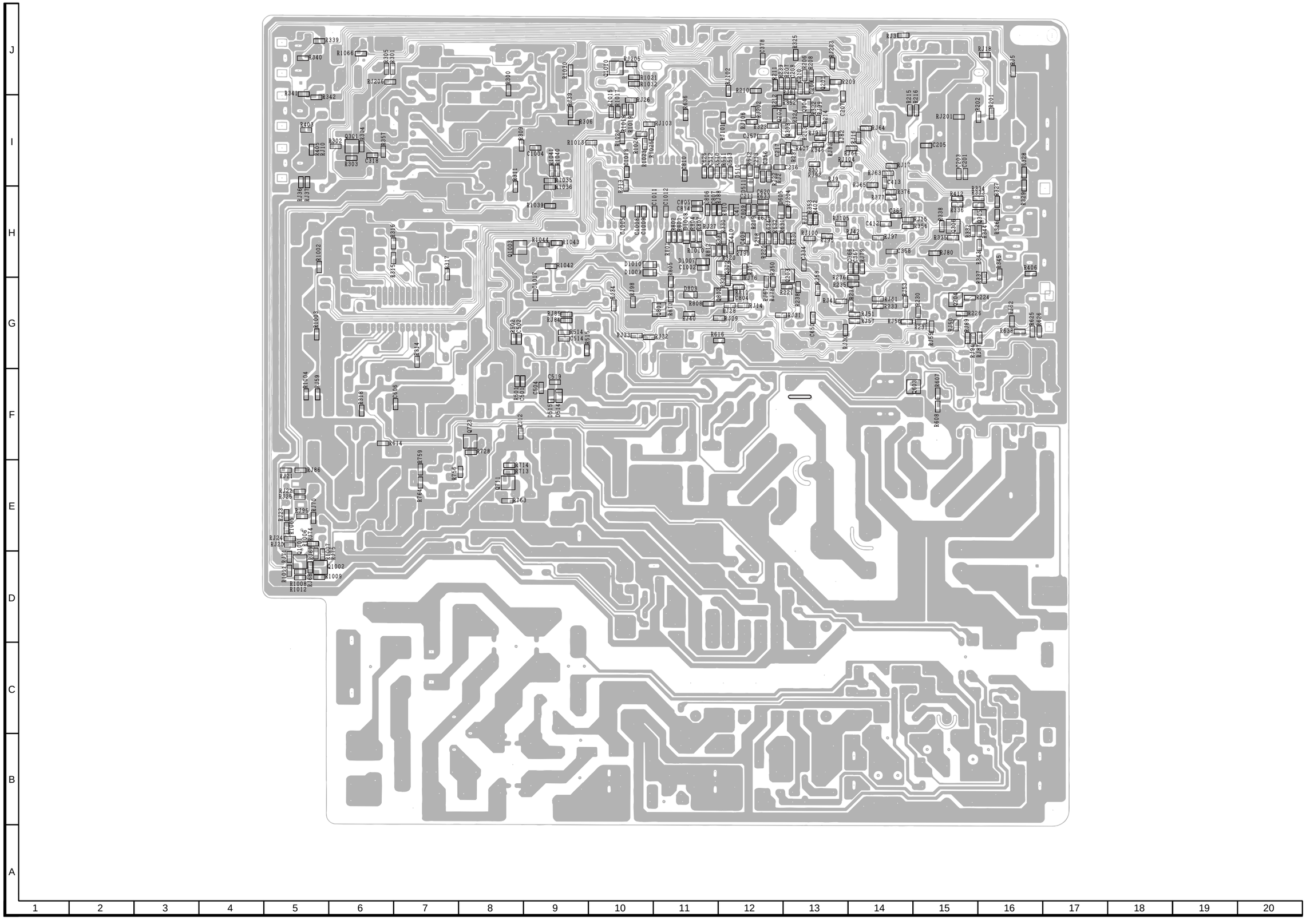
PRINTED WIRING BOARD ASSEMBLIES

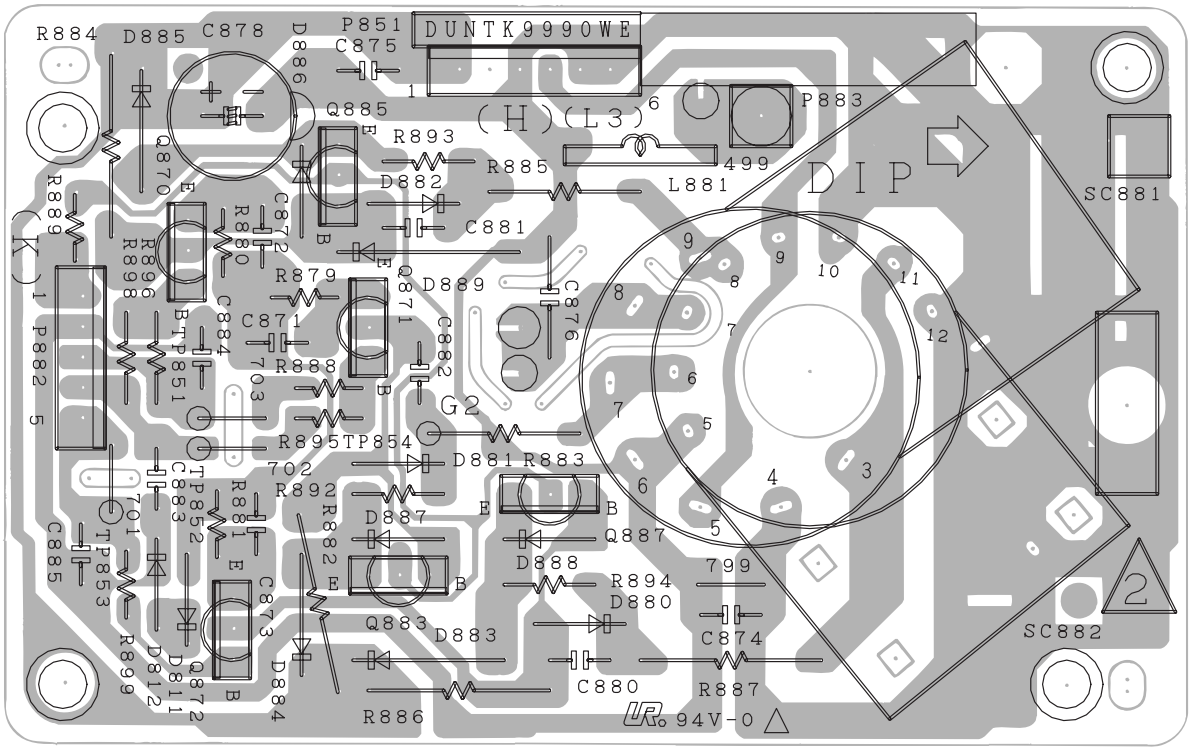
PWB-A: MAIN UNIT (WIRING SIDE)



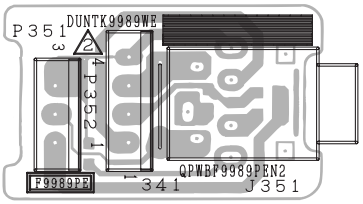
20GT-20
21GT-20

PWB-A: MAIN UNIT (WIRING SIDE) (CHIP PARTS)

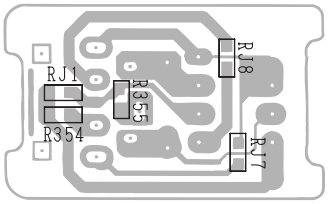




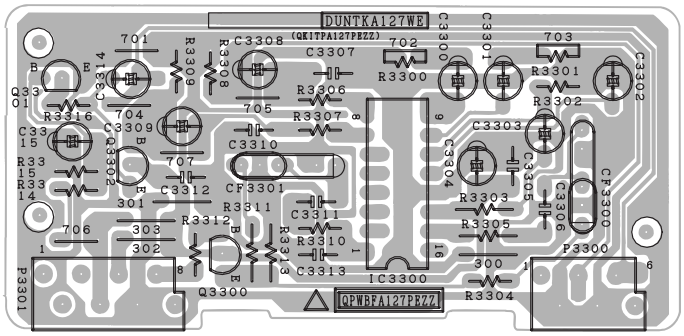
PWB-B: CRT UNIT



PWB-C: MONO HEADPHONE UNIT (WIRING SIDE)



PWB-C: MONO HEADPHONE UNIT (WIRING SIDE) (CHIP PARTS)



PWB-D: MONO BILLINGUAL UNIT

REPLACEMENT PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" in the Replacement Parts Lists.
The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. **MODEL NUMBER**
2. **REF. NO.**
3. **PART NO.**
4. **DESCRIPTION**

MARK ★ : SPARE PARTS-DELIVERY SECTION.

Ref. No.	Part No.	★	Description	Code

PICTURE TUBE

20GT-20

⚠	VB48LGS20X/*S		Picture Tube	
⚠ L708	RCiLG0002KJZZ		ADG Coil	
⚠	RCiLH1837CEZZ	R	Deflection Yoke	BC
⚠	QEARC2006CEZZ		Ground-Part	
	MSPRT0001PEFJ	R	Spring	AC
	PMAGF3041CEZZ	R	Magnet	AG
	LHLDW0003PEKZ	R	Holder	AB
	LHLDW1075PEKZ	R	Holder	AC
	PSPAG0004KJZZ	R	Spacer	AB

21GT-20

⚠	VB51LMU20X/*S		Picture Tube	
⚠ L708	RCiLG0003KJZZ		ADG Coil	
⚠	RCiLH0002KJZZ		Deflection Yoke	
⚠	QEARC2115CEZZ		Ground-Part	
	MSPRT0001PEFJ	R	Spring	AC
	PMAGF3041CEZZ	R	Magnet	AG
	LHLDW0003PEKZ	R	Holder	AB
	LHLDW1075PEKZ	R	Holder	AC
	PSPAG0004KJZZ	R	Spacer	AB

PRINTED WIRING BOARD ASSEMBLIES
(NOT REPLACEMENT ITEM)

PWB-A	DUNTK9988WET0	-	Main Unit(21GT-20)	—
PWB-A	DUNTK9988WET1	-	Main Unit(20GT-20)	—
PWB-B	DUNTK9990WET0	-	CRT Unit(21GT-20)	—
PWB-B	DUNTK9990WET1	-	CRT Unit(20GT-20)	—
PWB-C	DUNTK9989WET0	-	Mono Headphone Unit	—
PWB-D	DUNTKA127WET0	-	Mono Billingual Unit	—

Ref. No.	Part No.	★	Description	Code

PWB-A DUNTK9988WET0/WET1 MAIN UNIT

TUNER

NOTE: THE PARTS HERES SHOWN ARE SUPPLIED AS AN ASSEMBLY NOT INDEPENDENTLY.

⚠ TU201	VTUVTST5HD84/	R	Tuner	BB

INTEGRATED CIRCUITS

IC301	VHiTDA7056A-1	R	TDA7056A	AP
IC401	VHiM52797SP-1	R	M52797SP	AP
IC501	VHiTDA8357/-1	R	TDA8357	AN
IC605	VHiKA7808Pi-1	R	KA7808PI	AF
IC701	VHiSTRF6654-1	R	STR-F6654	AX
IC751	VHiTA48M033-1	R	TA48M033F	AH
IC753	VHiSE115N//-1	R	SE115N	AF
IC801	RH-iX3368CEN1	R	IX3368CE	BE
IC1002	VHiPST573J/-1	R	PST573J	AE
IC1003	VHiM24C04W/-1	R	M24C04W	AG
IC1005	VHiKA7805Pi-1	R	KA7805PI	AE

TRANSISTORS

Q201	VS2SC2735//1E	R	2SC2735	AC
Q203	VS2SD601AR/-1	R	2SD601AR	AC
Q204	VS2SD601AR/-1	R	2SD601AR	AC
Q301	VS2SD601AR/-1	R	2SD601AR	AC
Q304	VS2SD601AR/-1	R	2SD601AR	AC
Q305	VS2SD601AR/-1	R	2SD601AR	AC
Q601	VS2SC2482//-1	R	2SC2482	AD
Q602	VS2SD2586//1E	R	2SD2586	AM
Q603	VS2SD601AR/-1	R	2SD601AR	AC
Q801	VS2SB709AR/-1	R	2SB709AR	AC
Q802	VS2SB709AR/-1	R	2SB709AR	AC
Q1003	VS2SD601AR/-1	R	2SD601AR	AC
Q1010	VS2SD601AR/-1	R	2SD601AR	AC

DIODES AND LED'S

D201	RH-EX0676GEZZ	R	Zener Diode	AA
D301	VHD1SS119//-1	R	1SS119	AB
D305	RH-EX0631GEZZ	R	Zener Diode	AA
D308	RH-EX0631GEZZ	R	Zener Diode	AA
D311	VHDRL3Z////-1	R	RL3Z	AE
D401	RH-EX0631GEZZ	R	Zener Diode	AA
D402	RH-EX0631GEZZ	R	Zener Diode	AA
D501	RH-EX0640GEZZ	R	Zener Diode	AA
D502	VHD1SS119//-1	R	1SS119	AB
D503	VHD1SS119//-1	R	1SS119	AB
D504	VHD1SS119//-1	R	1SS119	AB
D505	RH-DX0127CEZZ	R	DX0127CE	AC
D507	VHD1SS119//-1	R	1SS119	AB
D508	RH-EX0647GEZZ	R	Zener Diode	AA
D509	RH-EX0647GEZZ	R	Zener Diode	AA
D510	RH-EX0867CEZZ	R	Zener Diode	AC
D511	RH-EX0867CEZZ	R	Zener Diode	AC
D512	VHD1SS119//-1	R	1SS119	AB
D513	VHD1SS119//-1	R	1SS119	AB
D514	RH-EX0903CEZZ	R	Zener Diode	AC
D515	RH-EX0903CEZZ	R	Zener Diode	AC
D602	VHD1SS119//-1	R	1SS119	AB
D603	RH-DX0062CEZZ	R	DX0062CE	AD
D604	VHD1SS119//-1	R	1SS119	AB
D605	RH-EX0840CEZZ	R	Zener Diode	AC
D606	VHD1SS119//-1	R	1SS119	AB
D607	RH-EX0658GEZZ	R	Zener Diode	AA
D608	RH-EX0604GEZZ	R	Zener Diode	AB
D609	VHD1SS119//-1	R	1SS119	AB
D611	RH-DX0302CEZZ	R	DX0302CE	AC
D612	RH-EX0627GEZZ	R	Zener Diode	AA
D613	VHD1SS119//-1	R	1SS119	AB
D614	VHD1SS119//-1	R	1SS119	AB
D701	RH-DX0386CEZZ	R	DX0386CE	AG
D702	VHD1SS82///1A	R	1SS82	AC
D705	RH-DX0492CEZZ	R	DX0492CE	AE
D706	VHD1SS82///1A	R	1SS82	AC
D707	VHD1SS82///1A	R	1SS82	AC
D708	RH-DX0400CEZZ	R	DX0400CE	AC
D709	RH-DX0164CEZZ	R	DX0164CE	AC

Ref. No.	Part No.	★	Description	Code
D710	RH-EX0601GEZZ	R	Zener Diode	AA
D711	VHD1SS82///1A	R	1SS82	AC
D712	VHD1SS82///1A	R	1SS82	AC
D713	RH-EX0621GEZZ	R	Zener Diode	AB
D714	RH-DX0055TAZZ	R	DX0055TA	AD
D715	RH-DX0055TAZZ	R	DX0055TA	AD
D718	RH-EX0649GEZZ	R	Zener Diode	AB
D751	RH-DX0471CEZZ	R	DX0471CE	AE
D752	VHD1SS119//-1	R	1SS119	AB
D753	RH-DX0471CEZZ	R	DX0471CE	AE
D758	RH-DX0461CEZZ	R	DX0461CE	AG
D801	VHD1SS119//-1	R	1SS119	AB
D802	VHD1SS119//-1	R	1SS119	AB
D803	VHD1SS119//-1	R	1SS119	AB
D804	VHD1SS119//-1	R	1SS119	AB
D805	VHD1SS119//-1	R	1SS119	AB
D806	VHD1SS119//-1	R	1SS119	AB
D1001	RH-PX0423CEZZ	R	LED	AD
D1004	VHD1SS119//-1	R	1SS119	AB
D1007	RH-EX0867CEZZ	R	Zener Diode	AC
D1008	RH-EX0867CEZZ	R	Zener Diode	AC
D1009	RH-EX0867CEZZ	R	Zener Diode	AC
D1010	RH-EX0867CEZZ	R	Zener Diode	AC
⚠ IC702	RH-FX0008GEZZ	R	PC123FY8	AE
⚠ VA700	RH-VX0047CEZZ	R	Varistor	AF
			PACKAGED CIRCUITS	
PR701	RMPTP0001PEZZ	R	Packaged Circuit	AN
X1001	RCRSB0281CEZZ	R	Crysta, CRSB0281CE	AG
			FILTERS	
CF202	RFiLC0335CEZZ		Filter, FiLC0335CE	
SF201	RFiLC0442CEZZ	R	Filter, FiLC0442CE	AL
			COILS	
L202	VP-DF270K0000	R	Peaking, 27µH	AB
L203	VP-DF270K0000	R	Peaking, 27µH	AB
L204	VP-XF1R2K0000	R	Peaking, 1.2µH	AB
L205	VP-DF1R0K0000	R	Peaking, 1µH	AB
L206	VP-DF1R0K0000	R	Peaking, 1µH	AB
L209	VP-XF100K0000	R	Peaking, 10µH	AB
L401	VP-DF1R0K0000	R	Peaking, 1µH	AB
L601	VP-CF1R0M0000	R	Peaking, 1µH	AB
L603	RCiLP0225CEZZ	R	Coil, CiLP0225CE	AF
⚠ L702	RCiLF0019PEZZ	R	Coil, CiLF0019PE	AN
L802	VP-DF100K0000	R	Peaking, 10µH	AB
L803	VP-DF100K0000	R	Peaking, 10µH	AB
L1030	VP-DF100K0000	R	Peaking, 10µH	AB
L1050	VP-DF100K0000	R	Peaking, 10µH	AB
L1051	VP-DF100K0000	R	Peaking, 10µH	AB
			TRANSFORMERS	
⚠ T601	RTRNZ0026PEZZ	R	Transformer	AH
⚠ T602	RTRNF0188PEZZ		H-Volt Transformer	
⚠ T701	RTRNZ0141PEZZ	R	Transformer	AR
			CAPACITORS	
C200	VCEA0A1CW476M	R	47 16V Electrolytic	AB
C203	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C204	VCEA0A1CW107M	R	100 16V Electrolytic	AC
C205	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C206	VCEA0A1HW106M	R	10 50V Electrolytic	AB
C207	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C208	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C209	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C210	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C211	VCKYCY1EF104Z	R	0.1 25V Ceramic	AA
C212	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C213	VCKYCY1HF223Z	R	0.022 50V Ceramic	AB
C214	VCEA0A1CW226M	R	22 16V Electrolytic	AB
C216	VCKYCY1HB821K	R	820p 50V Ceramic	AA
C217	VCKYCY1HB472K	R	4700p 50V Ceramic	AA
C301	VCEA0A1CW107M	R	100 16V Electrolytic	AC
C302	VCEA0A1HW225M	R	2.2 50V Electrolytic	AB
C303	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C304	VCQYTA1HM473J	R	0.047 50V Mylar	AA
C305	VCQYTA1HM473J	R	0.047 50V Mylar	AA

Ref. No.	Part No.	★	Description	Code
C312	VCQYTA1HM123J	R	0.012 50V Mylar	AA
C314	VCEA0A1EW477M	R	470 25V Electrolytic	AD
C315	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C317	VCEA0A1HW224M	R	0.22 50V Electrolytic	AB
C318	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C331	VCEA0A1HW105M	R	1 50V Electrolytic	AB
C332	VCEA0A1EW477M	R	470 25V Electrolytic	AD
C333	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C356	VCKYCY1HB682K	R	6800p 50V Ceramic	AA
C358	VCEA9M1CW106M	R	10 16V Electrolytic	AB
C359	VCEA9M1CW106M	R	10 16V Electrolytic	AB
C360	VCEA9M1HW225M	R	2.2 50V Electrolytic	AB
C361	VCE9GA1HW225M	R	2.2 50V Electrolytic	AB
C362	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C364	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C366	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C367	VCCCCY1HH221J	R	220p 50V Ceramic	AA
C368	VCCCCY1HH221J	R	220p 50V Ceramic	AA
C371	VCEA0A1CW476M	R	47 16V Electrolytic	AB
C375	VCEAEA1HW225M	R	2.2 50V Electrolytic	AB
C376	VCKYPA1HB102K	R	1000p 50V Ceramic	AA
C390	VCEA0A1HW105M	R	1 50V Electrolytic	AB
C401	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C402	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C403	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C404	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C405	VCEA0A1CW107M	R	100 16V Electrolytic	AC
C406	VCEA0A1CW477M	R	470 16V Electrolytic	AC
C407	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C408	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C409	VCKYCY1EF104Z	R	0.1 25V Ceramic	AA
C410	VCKYCY1EF104Z	R	0.1 25V Ceramic	AA
C411	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C412	VCKYCY1HB471K	R	470p 50V Ceramic	AA
C413	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C414	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C469	VCEA0A1HW105M	R	1 50V Electrolytic	AB
C501	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C502	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C503	VCEA0A1EW108M	R	1000 25V Electrolytic	AD
C504	VCKYCY1HF223Z	R	0.022 50V Ceramic	AB
C506	VCQYTA1HM104J	R	0.1 50V Mylar	AA
C507	VCEA0A1JW107M	R	100 63V Electrolytic	AC
C508	VCQYTA1HM103J	R	0.01 50V Mylar	AA
C512	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C513	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C514	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C515	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C516	VCEA0A1JW477M	R	470 63V Electrolytic	AE
C517	VCFYFA1HA104J	R	0.1 50V Metallzed Polypro Film	AA
C601	VCEAGA2EW106M	R	10 250V Electrolytic	AC
C602	VCQYTA1HM104J	R	0.1 50V Mylar	AA
C603	VCEA0A1HW105M	R	1 50V Electrolytic	AB
C604	VCEA0A1HW105M	R	1 50V Electrolytic	AB
C605	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C606	VCKYCY1HF103Z	R	0.01 50V Ceramic	AA
C607	VCEA0A1CW477M	R	470 16V Electrolytic	AC
C608	VCEA0A1EW476M	R	47 25V Electrolytic	AB
C609	VCEA0A1EW108M	R	1000 25V Electrolytic	AD
C610	VCFYSB2EB823J	R	0.082 250V Metallzed Polypro Film	AD
C611	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C612	RC-EZ0724CEZZ	R	100 160V Electrolytic	AG
C613	VCFPPD2DB684J	R	0.68 200V Metallzed Polypro Film (20GT-20)	AE
C613	VCFPPJ2EB824J		0.82 250V Metallzed Polypro Film (21GT-20)	
C614	RC-KZ0035CEZZ	R	220p 2kV Ceramic (21GT-20)	AB
C614	RC-KZ0039CEZZ	R	680p 2kV Ceramic (20GT-20)	AB
C615	VCFPPB2EB224J	R	0.22 250V Metallzed Polypro Film	AD
C616	VCFPPD3CA752H	R	7500p 1600V Metallzed Polypro Film	AF

Ref. No.	Part No.	★	Description	Code
C617	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C620	VCKYCY1EF104Z	R	0.1 25V Ceramic	AA
C623	VCQYTA1HM222J	R	2200p 50V Mylar	AA
C624	VCQYTA1HM472J	R	4700p 50V Mylar	AB
C625	VCEA0A1HW105M	R	1 50V Electrolytic	AB
C626	VCKYCY1HF223Z	R	0.022 50V Ceramic	AB
C627	VCEA0A1HW106M	R	10 50V Electrolytic	AB
C628	VCEA0A1HW474M	R	0.47 50V Electrolytic	AB
C650	VCKYCY1EF104Z	R	0.1 25V Ceramic	AA
C654	VCEA0A1CW476M	R	47 16V Electrolytic	AB
C700	VCQYTA2AA103K	R	0.01 100V Mylar	AC
⚠ C701	RC-FZ008SGEZZ	R	0.1 AC250V	AD
			MetalIzed Polypro Film	
C702	RC-KZ0160GEZZ	R	0.01 250V Ceramic	AC
C703	RC-KZ0160GEZZ	R	0.01 250V Ceramic	AC
C704	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C705	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C707	RC-EZ0804CEZZ	R	220 400V Electrolytic	AU
C708	RC-KZ0160GEZZ	R	0.01 250V Ceramic	AC
C709	VCQYTA1HM471J	R	470p 50V Mylar	AB
C711	RC-KZ0039CEZZ	R	680p 2kV Ceramic	AB
C712	VCQYTA1HM102J	R	1000p 50V Mylar	AA
C713	RC-KZ007JCEZZ	R	0.01 250V Ceramic	AC
C714	VCKYPH3DB561K	R	560p 2000VCeramic	AC
C715	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C717	VCQYTA1HM182J	R	1800p 50V Mylar	AA
C718	VCEAGA2AW475M	R	4.7 100V Electrolytic	AB
C719	VCEA9M1HW226M	R	22 50V Electrolytic	AB
⚠ C721	RC-KZ0102GEZZ	R	680p 4kV Ceramic	AE
C751	VCEA0A1CW476M	R	47 16V Electrolytic	AB
C752	VCEA0A0JW107M	R	100 6.3V Electrolytic	AB
C753	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C755	VCEA0A1CW108M	R	1000 16V Electrolytic	AD
⚠ C759	VCKYPA1HB102K	R	1000p 50V Ceramic	AA
C760	RC-KZ0039CEZZ	R	680p 2kV Ceramic	AB
C761	VCEA4W2CN227M	R	220 160V Electrolytic	AG
C762	VCQYTA1HM473J	R	0.047 50V Mylar	AA
C801	VCEA0A1HW105M	R	1 50V Electrolytic	AB
C802	VCEA0A1CW337M	R	330 16V Electrolytic	AC
C803	VCEA9M1CW107M	R	100 16V Electrolytic	AB
C804	VCKYCY1HB222K	R	2200p 50V Ceramic	AA
C805	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C806	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C807	VCKYCY1HB102K	R	1000p 50V Ceramic	AA
C808	VCEA0A1CW107M	R	100 16V Electrolytic	AC
C809	VCKYCY1HF223Z	R	0.022 50V Ceramic	AB
C810	VCKYCY1EF104Z	R	0.1 25V Ceramic	AA
C811	VCEA0A1CW107M	R	100 16V Electrolytic	AC
C812	VCFYFA1HA224J	R	0.22 50V	AB
			MetalIzed Polypro Film	
C813	VCFYFA1HA224J	R	0.22 50V	AB
			MetalIzed Polypro Film	
C814	VCKYCY1HB471K	R	470p 50V Ceramic	AA
C1001	VCEA0A0JW107M	R	100 6.3V Electrolytic	AB
C1003	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C1004	VCKYCY1EF104Z	R	0.1 25V Ceramic	AA
C1005	VCKYCY1HF223Z	R	0.022 50V Ceramic	AB
C1006	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C1007	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C1008	VCCCCY1HH330J	R	33p 50V Ceramic	AA
C1009	VCCCCY1HH330J	R	33p 50V Ceramic	AA
C1010	VCEA0A0JW107M	R	100 6.3V Electrolytic	AB
C1011	VCKYCY1HF223Z	R	0.022 50V Ceramic	AB
C1012	VCKYCY1HF223Z	R	0.022 50V Ceramic	AB
C1013	VCEA0A0JW107M	R	100 6.3V Electrolytic	AB
C1014	VCEA0A1CW106M	R	10 16V Electrolytic	AB
C1015	VCFYFA1HA474J	R	0.47 50V	AC
			MetalIzed Polypro Film	
C1016	VCQYTA1HM104J	R	0.1 50V Mylar	AA
C1018	VCKYCY1HB221K	R	220p 50V Ceramic	AA
C1019	VCEA9M1HW225M	R	2.2 50V Electrolytic	AB

RESISTORS

RJ2	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ9	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ10	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ13	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ14	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
			(20GT-20)			
RJ15	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ16	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ21	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ25	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ26	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ27	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ28	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
			(20GT-20)			
RJ29	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ32	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ33	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ34	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ40	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
			(20GT-20)			
RJ41	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ5	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
			(21GT-20)			
RJ51	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ53	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ55	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ56	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ61	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ64	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ66	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ67	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ68	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ69	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ71	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ74	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ75	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ79	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ80	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ83	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ84	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ85	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ87	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ88	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ90	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ92	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ94	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ95	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ96	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ103	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ201	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ202	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ205	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
RJ206	VRS-CY1JF000J	R	0	1/16W	Metal Oxide	AA
JA1033	VRD-RA2BE102J	R	1k	1/8W	Carbon	AA
R201	VRS-CY1JF101J	R	100	1/16W	Metal Oxide	AA
R202	VRS-CY1JF101J	R	100	1/16W	Metal Oxide	AA
R203	VRD-RM2HD102J	R	1k	1/2W	Carbon	AA
R204	VRD-RM2HD102J	R	1k	1/2W	Carbon	AA
R205	VRD-RA2BE680J	R	68	1/8W	Carbon	AA
R206	VRS-CY1JF122J	R	1.2k	1/16W	Metal Oxide	AA
R207	VRS-CY1JF221J	R	220	1/16W	Metal Oxide	AA
R208	VRS-CY1JF122J	R	1.2k	1/16W	Metal Oxide	AA
R209	VRS-CY1JF392J	R	3.9k	1/16W	Metal Oxide	AA
R216	VRS-CY1JF681J	R	680	1/16W	Metal Oxide	AA
R217	VRD-RA2BE392J	R	3.9k	1/8W	Carbon	AA
R218	VRS-CY1JF102J	R	1k	1/16W	Metal Oxide	AA
R219	VRS-CY1JF391J	R	390	1/16W	Metal Oxide	AA
R220	VRS-CY1JF101J	R	100	1/16W	Metal Oxide	AA
R221	VRS-CY1JF102J	R	1k	1/16W	Metal Oxide	AA
R222	VRS-CY1JF681J	R	680	1/16W	Metal Oxide	AA
R223	VRD-RA2BE101J	R	100	1/8W	Carbon	AB
R224	VRS-CY1JF750J	R	75	1/16W	Metal Oxide	AA
R225	VRD-RA2EE680J	R	68	1/4W	Carbon	AA
R229	VRD-RA2EE680J	R	68	1/4W	Carbon	AA
R230	VRS-CY1JF561J	R	560	1/16W	Metal Oxide	AA
R231	VRS-CY1JF561J	R	560	1/16W	Metal Oxide	AA
R233	VRS-CY1JF181J	R	180	1/16W	Metal Oxide	AA
R237	VRS-CY1JF272J	R	2.7k	1/16W	Metal Oxide	AA
R238	VRS-CY1JF821J	R	820	1/16W	Metal Oxide	AA
R239	VRS-CY1JF221J	R	220	1/16W	Metal Oxide	AA
R301	VRS-CY1JF680J	R	68	1/16W	Metal Oxide	AA
R302	VRS-CY1JF473J	R	47k	1/16W	Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R303	VRS-CY1JF473J	R	47k 1/16W Metal Oxide	AA
R304	VRS-CY1JF392J	R	3.9k 1/16W Metal Oxide	AA
R305	VRS-CY1JF100J	R	10 1/16W Metal Oxide	AA
R307	VRD-RA2BE182J	R	1.8k 1/8W Carbon	AA
R308	VRD-RA2BE472J	R	4.7k 1/8W Carbon	AA
R322	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R325	VRS-CY1JF821J	R	820 1/16W Metal Oxide	AA
R328	VRS-CY1JF564J	R	560k 1/16W Metal Oxide	AA
R329	VRS-CY1JF332J	R	3.3k 1/16W Metal Oxide	AA
R330	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R331	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R332	VRS-CY1JF561J	R	560 1/16W Metal Oxide	AA
R333	VRS-CY1JF103J	R	10k 1/16W Metal Oxide	AA
R334	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R341	VRS-CY1JF332J	R	3.3k 1/16W Metal Oxide	AA
R342	VRS-CY1JF564J	R	560k 1/16W Metal Oxide	AA
R343	VRS-CY1JF104J	R	100k 1/16W Metal Oxide	AA
R344	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R352	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R357	VRS-CY1JF100J	R	10 1/16W Metal Oxide	AA
R376	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R377	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R378	VRN-VV3DBR68J	R	0.68 2W Metal Film	AA
R402	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R403	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R404	VRD-RA2BE820J	R	82 1/8W Carbon	AA
R406	VRS-CY1JF103J	R	10k 1/16W Metal Oxide	AA
R411	VRD-RA2BE820J	R	82 1/8W Carbon	AA
R412	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R501	VRS-CY1JF182J	R	1.8k 1/16W Metal Oxide	AA
R502	VRS-CY1JF182J	R	1.8k 1/16W Metal Oxide	AA
R503	VRD-RM2HD1R5J	R	1.5 1/2W Carbon	AA
R505	VRD-RM2HD330J	R	33 1/2W Carbon	AA
R506	VRD-RA2BE224J	R	220k 1/8W Carbon	AA
R508	VRD-RM2HD221J	R	220 1/2W Carbon	AA
R509	VRD-RM2HD1R0J	R	1 1/2W Carbon	AA
R510	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R511	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R513	VRD-RA2BE393J	R	39k 1/8W Carbon	AA
R514	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R515	VRS-CY1JF272J	R	2.7k 1/16W Metal Oxide	AA
R602	VRN-VV3DB1R5J	R	1.5 2W Metal Film (20GT-20)	AB
R602	VRN-VV3DB1R8J	R	1.8 2W Metal Film (21GT-20)	AB
R603	VRD-RM2HD102J	R	1k 1/2W Carbon	AA
R604	VRD-RA2BE393J	R	39k 1/8W Carbon	AA
R605	VRD-RM2HD101J	R	100 1/2W Carbon	AA
R606	VRD-RA2BE333J	R	33k 1/8W Carbon	AA
R607	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R608	VRS-CY1JF123J	R	12k 1/16W Metal Oxide	AA
R609	VRD-RA2BE223G	R	22k 1/8W Carbon (20GT-20)	AA
R609	VRS-RA2BE153J	R	15k 1/8W Carbon (21GT-20)	
R610	VRD-RA2BE822J	R	8.2k 1/8W Carbon	AA
R611	VRD-RA2EE563G	R	56k 1/4W Carbon	AA
R612	VRD-RA2BE103J	R	10k 1/8W Carbon	AA
R613	VRD-RA2BE103J	R	10k 1/8W Carbon	AA
R614	VRS-CY1JF103J	R	10k 1/16W Metal Oxide	AA
R615	VRS-KT3LB332J	R	3.3k 3W Metal Oxide	AC
R616	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R617	VRD-RM2HD472J	R	4.7k 1/2W Carbon	AA
R618	VRS-KA3HG3R3K	R	3.3 5W Metal Oxide	AD
R619	VRD-RM2HD682J	R	6.8k 1/2W Carbon	AA
R622	VRS-VV3DB331J	R	330 2W Metal Oxide	AA
R623	VRS-VV3DB150J	R	15 2W Metal Oxide	AA
R624	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R625	VRS-CY1JF184J	R	180k 1/16W Metal Oxide	AA
R626	VRS-CY1JF472J	R	4.7k 1/16W Metal Oxide	AA
R628	VRD-RM2HD470J	R	47 1/2W Carbon	AA
R630	VRS-CY1JF100J	R	10 1/16W Metal Oxide	AA
R631	VRS-CY1JF391J	R	390 1/16W Metal Oxide	AA
R632	VRS-CY1JF273J	R	27k 1/16W Metal Oxide	AA
R633	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R635	VRS-CY1JF822J	R	8.2k 1/16W Metal Oxide	AA
R636	VRS-CY1JF223J	R	22k 1/16W Metal Oxide	AA
R638	VRS-CY1JF103J	R	10k 1/16W Metal Oxide	AA
R639	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R701	VRW-KQ4AC3R3K	R	3.3 10W Cement	AE
R703	VRS-KT3LB473J	R	47k 3W Metal Oxide	AE
⚠ R704	VRG-PD2HD150J	R	15 1/2W Fuse Resistor	AC
R705	VRD-RA2BE122J	R	1.2k 1/8W Carbon	AA
R706	VRD-RM2HD152J	R	1.5k 1/2W Carbon	AA
R707	VRS-KT3LB473J	R	47k 3W Metal Oxide	AE
R708	VRD-RM2HD272J	R	2.7k 1/2W Carbon	AA
R709	VRD-RA2BE681J	R	680 1/8W Carbon	AA
R710	VRN-VV3ABR39J	R	0.39 1W Metal Film	AA
R711	VRN-VV3ABR33J	R	0.33 1W Metal Film	AA
⚠ R712	VRG-PD2HD150J	R	15 1/2W Fuse Resistor	AC
R717	VRD-RM2HD124J	R	120k 1/2W Carbon	AA
R718	VRD-RM2HD124J	R	120k 1/2W Carbon	AA
⚠ R719	VRC-UA2HG825K	R	8.2M 1/2W Solid	AA
R721	VRD-RA2BE393J	R	39k 1/8W Carbon	AA
R722	VRD-RM2HD124J	R	120k 1/2W Carbon	AA
R723	VRD-RA2BE684J	R	680k 1/8W Carbon	AA
⚠ R726	VRC-UA2HG825K	R	8.2M 1/2W Solid	AA
R750	VRD-RM2HD4R7J	R	4.7 1/2W Carbon	AA
R758	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R760	VRD-RA2BE471J	R	470 1/8W Carbon	AA
R801	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R802	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R803	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R804	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R805	VRS-CY1JF822J	R	8.2k 1/16W Metal Oxide	AA
R806	VRD-RA2BE123J	R	12k 1/8W Carbon	AA
R807	VRS-CY1JF103J	R	10k 1/16W Metal Oxide	AA
R808	VRS-CY1JF221J	R	220 1/16W Metal Oxide	AA
R809	VRD-RA2BE224J	R	220k 1/8W Carbon	AA
R811	VRS-CY1JF563J	R	56k 1/16W Metal Oxide	AA
R812	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R813	VRS-CY1JF221J	R	220 1/16W Metal Oxide	AA
R1001	VRD-RA2BE221J	R	220 1/8W Carbon	AA
R1002	VRS-CY1JF331J	R	330 1/16W Metal Oxide	AA
R1003	VRS-CY1JF471J	R	470 1/16W Metal Oxide	AA
R1004	VRS-CY1JF821J	R	820 1/16W Metal Oxide	AA
R1005	VRD-RA2BE181J	R	180 1/8W Carbon	AA
R1011	VRS-CY1JF820J	R	82 1/16W Metal Oxide	AA
R1012	VRS-CY1JF391J	R	390 1/16W Metal Oxide	AA
R1014	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1015	VRS-CY1JF332J	R	3.3k 1/16W Metal Oxide	AA
R1016	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1017	VRS-CY1JF332J	R	3.3k 1/16W Metal Oxide	AA
R1019	VRS-CY1JF472J	R	4.7k 1/16W Metal Oxide	AA
R1020	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1021	VRS-CY1JF153J	R	15k 1/16W Metal Oxide	AA
R1022	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1023	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R1024	VRS-CY1JF122J	R	1.2k 1/16W Metal Oxide	AA
R1025	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R1026	VRS-CY1JF224J	R	220k 1/16W Metal Oxide	AA
R1027	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1028	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1030	VRS-CY1JF102J	R	1k 1/16W Metal Oxide	AA
R1031	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA
R1032	VRS-CY1JF332J	R	3.3k 1/16W Metal Oxide	AA
R1034	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1035	VRS-CY1JF332J	R	3.3k 1/16W Metal Oxide	AA
R1036	VRS-CY1JF332J	R	3.3k 1/16W Metal Oxide	AA
R1037	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1038	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1039	VRS-CY1JF223J	R	22k 1/16W Metal Oxide	AA
R1040	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R1041	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA
R1043	VRS-CY1JF153J	R	15k 1/16W Metal Oxide	AA
R1044	VRS-CY1JF153J	R	15k 1/16W Metal Oxide	AA
R1045	VRD-RA2BE271J	R	270 1/8W Carbon	AA
R1046	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R1065	VRS-CY1JF101J	R	100 1/16W Metal Oxide	AA

BALUNES

FB306	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB
FB501	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB
FB502	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB
FB602	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB

Ref. No.	Part No.	★	Description	Code
FB701	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB
FB702	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB
FB751	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB
FB752	RBLN-0037CEZZ	R	Balun, BLN-0037CE	AB
	SWITCHES			
⚠ S701	QSW-P0591CEZZ	R	Switch	AQ
S1001	QSW-K0079GEZZ	R	Switch, CH Up	AB
S1002	QSW-K0079GEZZ	R	Switch, CH Down	AB
S1003	QSW-K0079GEZZ	R	Switch, Vol Up	AB
S1004	QSW-K0079GEZZ	R	Switch, Vol Down	AB
S1005	QSW-K0079GEZZ	R	Switch, Menu	AB
	MISCELLANEOUS PARTS			
⚠ ACC701	QACCZ3008PEZZ	R	AC Cord	AN
⚠ FH701	QFSHD1014CEZZ	R	Fuse Holder	AC
⚠ FH702	QFSHD1013CEZZ	R	Fuse Holder	AC
⚠ F701	QFS-C3229CEZZ	R	Fuse, T3.15A 250V	AD
J402	QJAKE0158CEZZ	R	Jack	AF
J403	QJAKE0159CEZZ	R	Jack	AF
J405	QJAKH0011AJZZ	R	Jack	AK
P301	QPLGN0441CEZZ	R	Plug, 4 Pin	AB
P303	QPLGN0541CEZZ	R	Plug, 5 Pin	AB
P502	QPLGN0603CEZZ	R	Plug, 6 Pin	AB
P602	QPLGN0641CEZZ	R	Plug, 6 Pin	AB
P701	QPLGN0207CEZZ	R	Plug, 2 Pin	AA
P712	QPLGN0269GEZZ	R	Plug, 2 Pin	AB
P1001	QPLGN0541CEZZ	R	Plug, 5 Pin	AB
P1002	QPLGN0541CEZZ	R	Plug, 5 Pin	AB
RDA300	PRDAR0248PEFW	R	Heat Sink, IC301	AF
RDA501	PRDAR0298PEFW	R	Heat Sink, IC501	AF
RDA601	PRDAR0224PEFW	R	Heat Sink, Q602	AF
RDA700	PRDAR0260PEFW	R	Heat Sink, IC701	AH
RMC1001	RRMCU0235CEZZ	R	Remote Receiver	AK
SP301	RSP-Z0005KJZZ		Speaker	
SP302	RSP-Z0005KJZZ		Speaker	
TP201	QLUGP0102PEZZ	R	Lug	AA
	LHLDP1066PE00	R	Holder	AC
	QCNW-0026KJZZ		Connecting Cord	
	QCNW-2405PEZZ	R	Connecting Cord	AE
	QCNW-2433PEN1	R	Connecting Cord	AF
	QCNW-2452PEZZ	R	Connecting Cord	AE

PWB-B DUNTK9990WET0/WET1 CRT UNIT

	TRANSISTORS			
Q870	VSBF422////-1	R	BF422	AC
Q871	VSBF422////-1	R	BF422	AC
Q872	VSBF422////-1	R	BF422	AC
Q883	VSBF421////-1	R	BF421	AC
Q885	VSBF421////-1	R	BF421	AC
Q887	VSBF421////-1	R	BF421	AC
	DIODES			
D811	VHD1SS119//-1	R	1SS119	AB
D812	VHD1SS119//-1	R	1SS119	AB
D880	VHD1SS119//-1	R	1SS119	AB
D881	VHD1SS119//-1	R	1SS119	AB
D882	VHD1SS119//-1	R	1SS119	AB
D883	VHD1SS82///1A	R	1SS82	AC
D884	VHD1SS82///1A	R	1SS82	AC
D885	VHD1SS82///1A	R	1SS82	AC
D886	VHD1SS82///1A	R	1SS82	AC
D887	VHD1SS82///1A	R	1SS82	AC
D888	VHD1SS82///1A	R	1SS82	AC
D890	RH-EX0627GEZZ	R	Zener Diode	AA
	CAPACITORS			
C871	VCKYPA1HB471K	R	470p 50V Ceramic	AA
C872	VCKYPA1HB471K	R	470p 50V Ceramic	AA
C873	VCKYPA1HB471K	R	470p 50V Ceramic	AA
C875	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C876	RC-KZ0150CEZZ	R	1000p 3kV Ceramic	AB
C878	VCEAGA2EW336M	R	33 250V Electrolytic	AD
C880	VCKYPA1HB471K	R	470p 50V Ceramic	AA
C881	VCKYPA1HB471K	R	470p 50V Ceramic	AA
C882	VCKYPA1HB471K	R	470p 50V Ceramic	AA
	RESISTORS			
R879	VRD-RA2BE471J	R	470 1/8W Carbon	AA
R880	VRD-RA2BE471J	R	470 1/8W Carbon	AA
R881	VRD-RA2BE471J	R	470 1/8W Carbon	AA
R882	VRS-VV3DB153J	R	15k 2W Metal Oxide	AA
R883	VRD-RM2HD272J	R	2.7k 1/2W Carbon	AA
R884	VRS-VV3DB153J	R	15k 2W Metal Oxide	AA
R885	VRD-RM2HD272J	R	2.7k 1/2W Carbon	AA
R886	VRS-VV3DB153J	R	15k 2W Metal Oxide	AA
R887	VRD-RM2HD272J	R	2.7k 1/2W Carbon	AA
R888	VRD-RA2BE471J	R	470 1/8W Carbon	AA
R892	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R893	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R894	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R898	VRD-RA2BE471J	R	470 1/8W Carbon	AA
R899	VRD-RA2BE471J	R	470 1/8W Carbon	AA
	MISCELLANEOUS PARTS			
P851	QPLGN0641CEZZ	R	Plug, 6 Pin	AB
P882	QPLGN0541CEZZ	R	Plug, 5 Pin	AB
⚠ SC881	QSOCV0840CEZZ	R	Socket, 11 Pin	AK

PWB-C DUNTK9989WET0 MONO HEADPHONE UNIT

	RESISTORS			
RJ1	VRS-CY1JF000J	R	0 1/16W Metal Oxide	AA
RJ7	VRS-CY1JF000J	R	0 1/16W Metal Oxide	AA
RJ8	VRS-CY1JF000J	R	0 1/16W Metal Oxide	AA
R354	VRS-CY1JF471J	R	470 1/16W Metal Oxide	AA
R355	VRS-CY1JF471J	R	470 1/16W Metal Oxide	AA
	MISCELLANEOUS PARTS			
J351	QJAKJ0047CEZZ	R	Jack	AD
P351	QPLGN0441CEZZ	R	Plug, 4 Pin	AB

PWB-D DUNTKA127WET0 MONO BILLINGUAL UNIT

	INTEGRATED CIRCUIT			
IC3300	VHiTDA9821/-1	R	TDA9821	AR
	TRANSISTOR			
Q3300	VS2SC1815GW-1	R	2SC1815GW	AB
	FILTER			
CF3300	RFiLC0338CEZZ	R	Filter, FiLC0338CE	AG
	CAPACITORS			
C3300	VCEA0A1HW225M	R	2.2 50V Electrolytic	AB
C3301	VCEA0A1HW225M	R	2.2 50V Electrolytic	AB
C3302	VCEA0A1HW225M	R	2.2 50V Electrolytic	AB
C3303	VCEA0A1HW225M	R	2.2 50V Electrolytic	AB
C3304	VCEA0A1CW107M	R	100 16V Electrolytic	AC
C3305	VCQYTA1HM223K	R	0.022 50V Mylar	AB
C3306	VCKYPA1HB222K	R	2200p 50V Ceramic	AA
C3310	VCQYTA1HM223K	R	0.022 50V Mylar	AB
C3312	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C3313	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
	RESISTORS			
R3300	VRD-RA2BE122J	R	1.2k 1/8W Carbon	AA
R3301	VRD-RA2BE122J	R	1.2k 1/8W Carbon	AA
R3302	VRD-RA2BE273J	R	27k 1/8W Carbon	AA
R3303	VRD-RA2BE153J	R	15k 1/8W Carbon	AA
R3304	VRD-RA2BE561J	R	560 1/8W Carbon	AA
R3307	VRD-RA2BE561J	R	560 1/8W Carbon	AA
R3312	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R3313	VRD-RA2BE102J	R	1k 1/8W Carbon	AA

Ref. No.	Part No.	★	Description	Code
	MISCELLANEOUS PARTS			
P3300	QPLGZ0610CEZZ	R	Plug, 6 Pin	AB
P3301	QPLGZ0810CEZZ	R	Plug, 8 Pin	AD

SUPPLIED ACCESORIES

	ACCESSORIES			
	RRMCG0018KJSA	R	Infrared R-C	AX
	TiNS-0109KJZZ		Instruction Book	

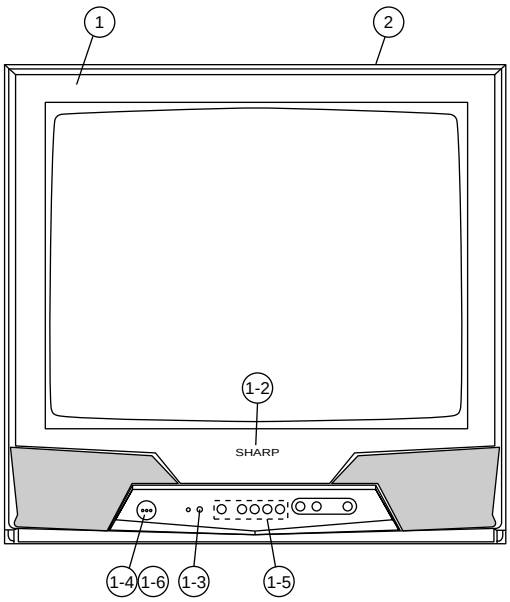
PACKING PARTS
(NOT REPLACEMENT ITEM)

	SPAKC0102KJZZ	-	Packing Case	—
	SPAKP0697CEZZ	-	Wrapping Paper	—
	SPAKX0067KJZZ	-	Packing Add.	—
	SPAKX0068KJZZ	-	Packing Add.	—
	SSAKA0230CEZZ	-	Polyethylene Bag	—

CABINET PARTS

1	CCABA0078WEA0		Front Cabinet(20GT-20)	
1	CCABA0079WEA0		Front Cabinet(21GT-20)	
1-2	HBDGB0001KJSA	R	SHARP Badge	AE
1-3	HDECQ0038KJSA		LED R/C Cover	
1-4	JBTN-0042KJSA		Power Button	
1-5	JBTN-0043KJSA		Control Button	
1-6	MSPRC0003KJFW		Spring	
2	CCABB0053WEA0		Rear Ass'y Cabinet	

CABINET PARTS LOCATION



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20GT-20
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